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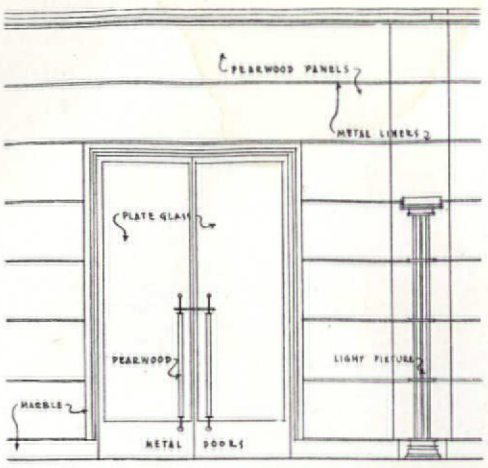

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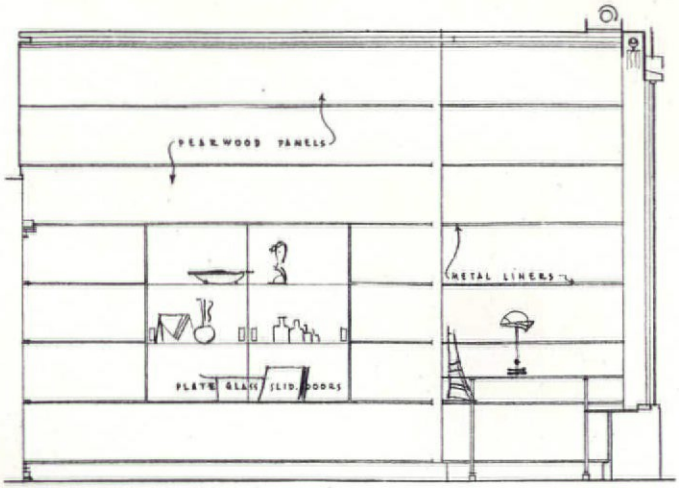
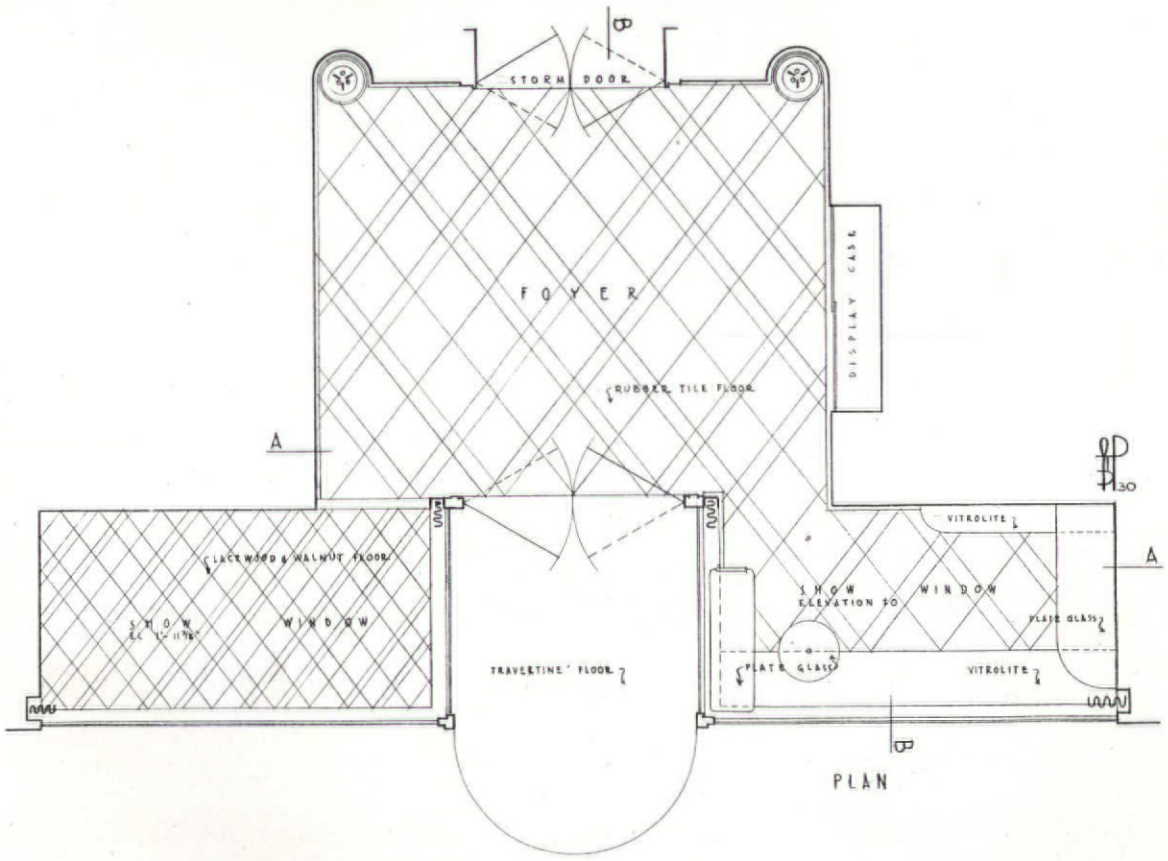


ELEVATION "B"



PLAN

L. P. HOLLANDER COMPANY
3 EAST 57th STREET, NEW YORK CITY
DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

Working details of main entrance and show windows. Openness of window permits view into foyer.

John Wallace Gillies, Inc.

L. P. HOLLANDER COMPANY
3 EAST 57th STREET, NEW YORK CITY
DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

West show window. Background paneled in pearwood. Inlaid floor. Working details on reverse side.

THE ARCHITECTURAL RECORD

AN ILLUSTRATED
MONTHLY MAGAZINE
OF ARCHITECTURE

VOLUME 69 NUMBER 1 JANUARY, 1931

L. P. HOLLANDER COMPANY STORE

JOCK D. PETERS, DESIGNER, COLLABORATING WITH ELEANOR LEMAIRE

PROBLEM

To design seven selling floors for a woman's specialty shop; to give a luxurious spaciousness conducive to leisurely selection; to preserve the architectural units and at the same time to satisfy the display and selling needs; to incorporate niches, shelves and illuminated display cases in the architectural treatment because such permanent displays are of utmost importance. Conditions imposed by the merchandising requirements include adequate space for stock and fitting rooms, both of which must be readily accessible to their departments.

PLANNING

The rules of the fire department governing fire exits demand that certain definite space be used on each floor for fire exits. Instead of permitting those exits to interfere with the floor layouts the floors were designed accordingly, giving layouts which help the merchant to present his merchandise with the least possible amount of customer resistance. The usual fixed island counters were not used; instead, the present plan, born of necessity, enables the management to handle the floor sales with the minimum amount of sales help.

ENTRANCE HALL

The narrow frontage is reduced further by the need for two special passages, one a service entrance, the other a fire exit. In order to avoid a shut-in appearance the display windows, varying in floor level, were designed with open backs to permit the horizontal pearwood panels of the foyer walls to pass through and to form the background for the display windows. The clear glass inner storm door allows an open view of the main floor.

Privacy in the selection of accessories and perfumes was found necessary. This need was met by designing two small rooms on either side of the entrance. The powder room adjoins the evening bag room; on the opposite side of the entrance is the small perfume room. These rooms are not entirely cut off from view of the shoppers inside the store because of the large circular window and the corner treatment of clear glass.

The wall cases are of beige lacquer finish with magnoliawood backing. The free-standing display and selling cases are of aspenwood with lacquer trim. The decorative red trim in the counter and display cases was employed to tie these various sections together.

THIRD FLOOR

Sportswear. In this department zebrawood with formica inlay was chosen for the fixtures. The big sweep of over-all carpet, designed in blue and gold, contrasts with

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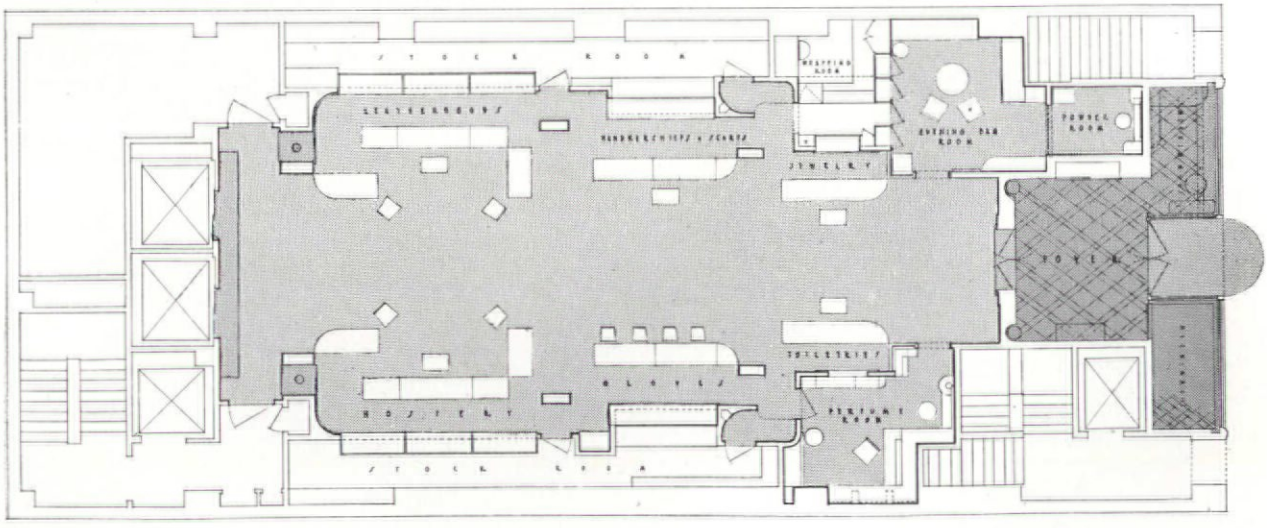
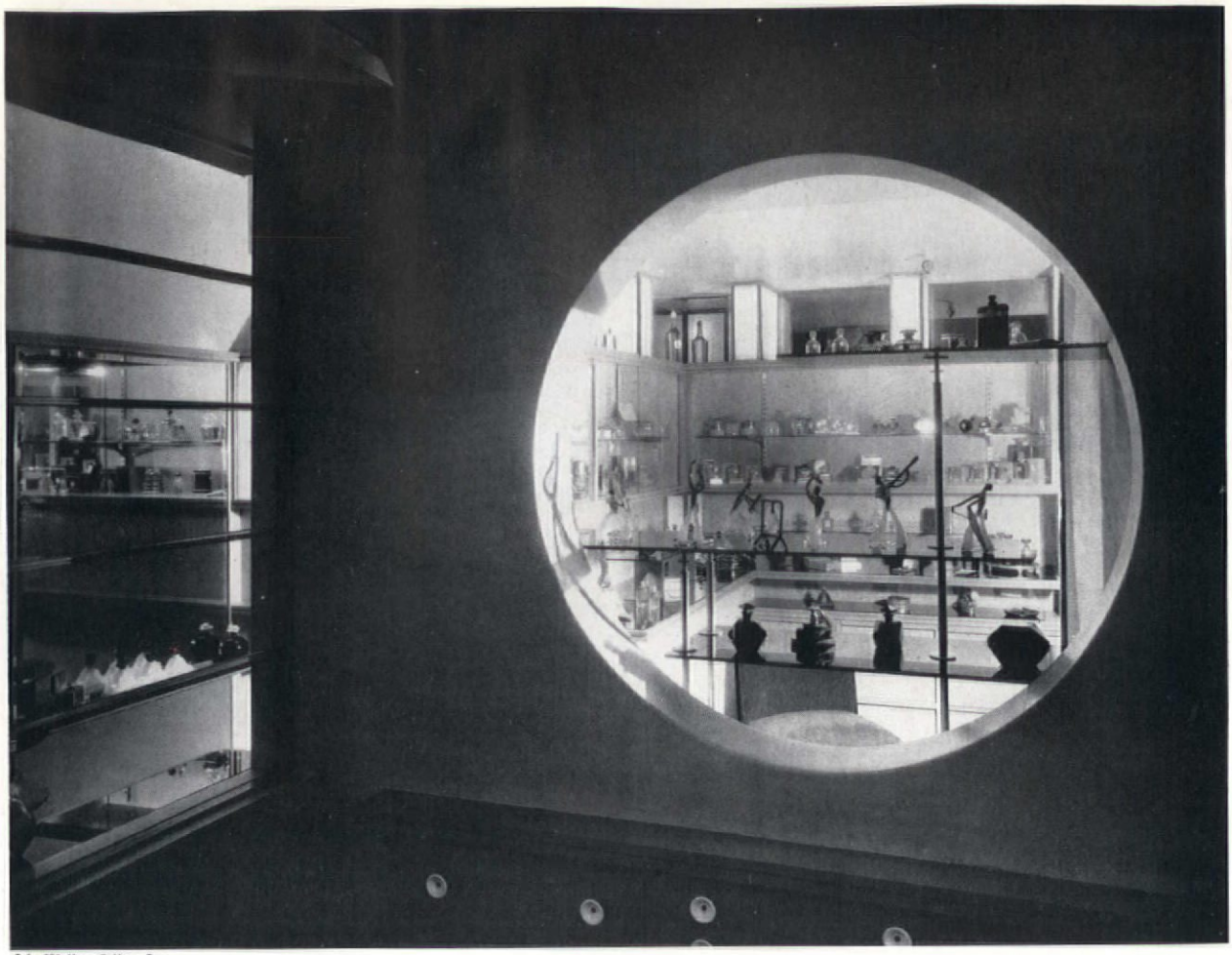
COLLABORATING WITH ELEANOR LEMAIRE

Entrance and show windows.



Ground floor plan.



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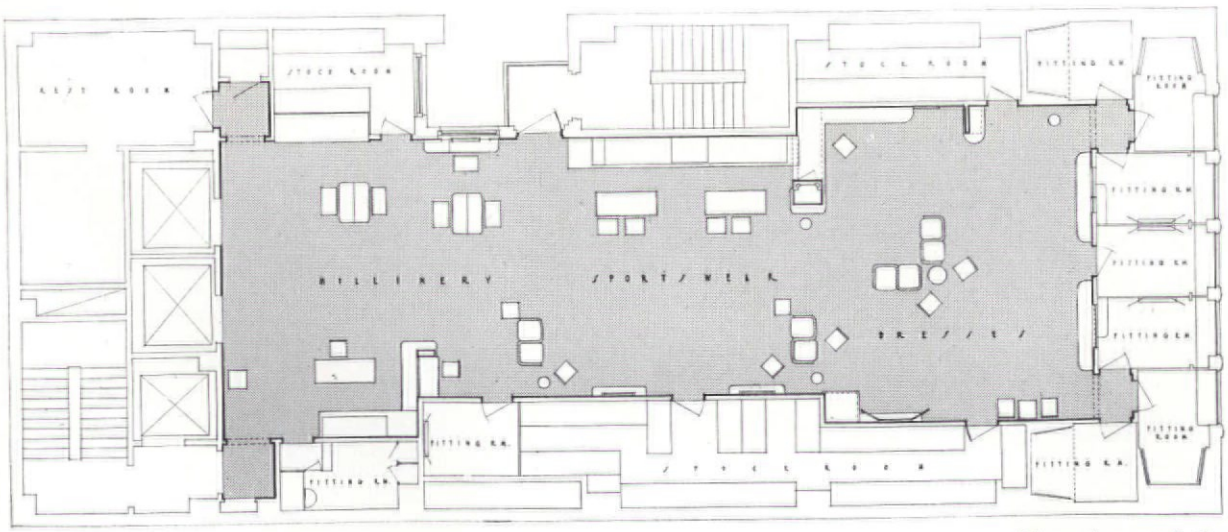
Main floor, looking into perfume room, opposite evening bag room.



Plan of seventh floor.

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DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

Fifth floor, ready to wear dress department. Recessed lighting fixtures in walls and ceilings.

the restful brown tones of the cork walls in the coat section. The open treatment of this floor, with its direct daylight, gives outdoor atmosphere.

FIFTH FLOOR

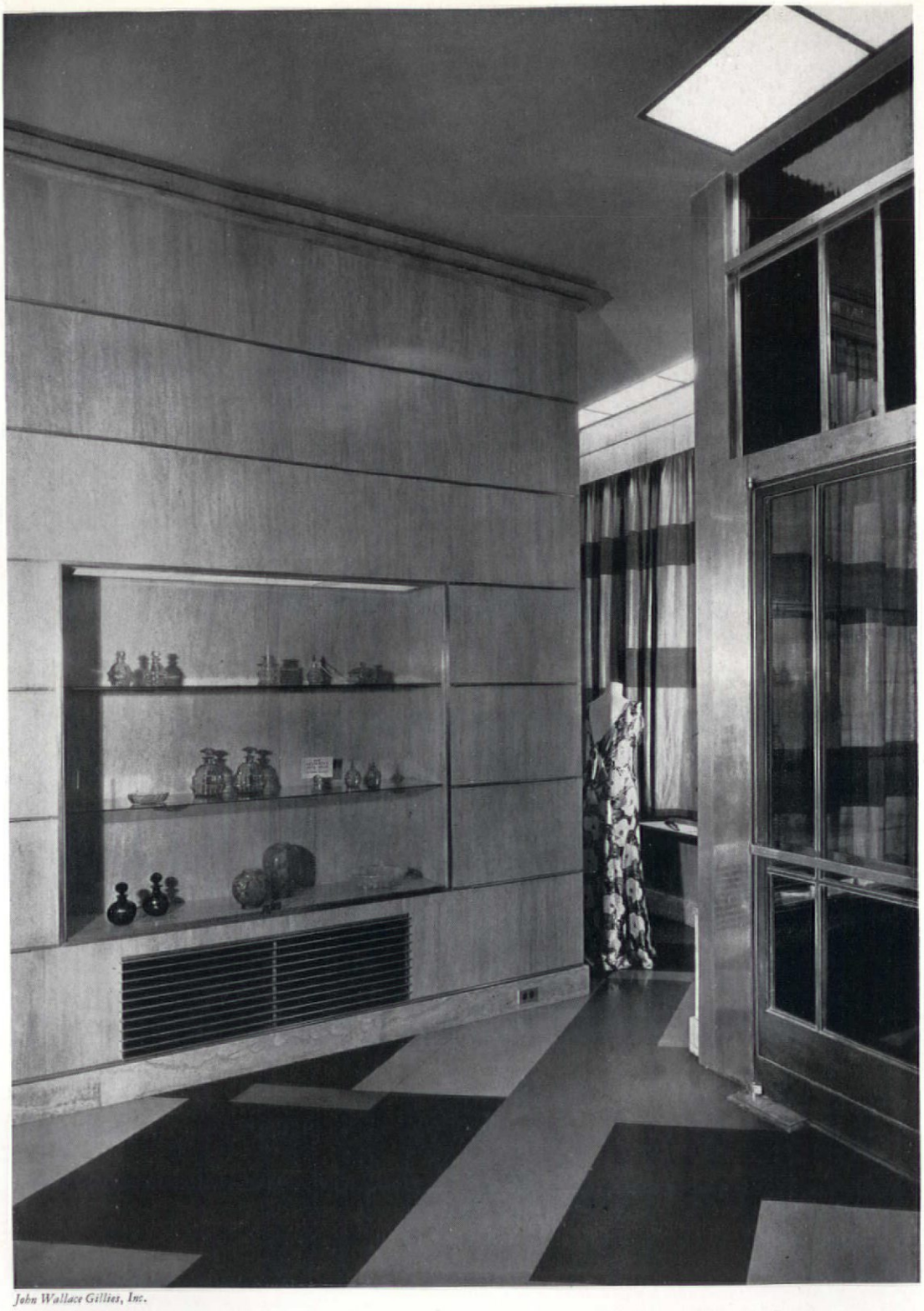
Ready to wear. The merchandising needs of this department demanded a very simple layout. Shelves of aspenwood are placed conveniently for the dress accessories.

SIXTH FLOOR

Custom dressmaking. The salon idea was used here to suggest leisurely, restful shopping. Walls of peach color and carpet of eggplant color add to the sense of quietness so conducive to the uninterrupted selection of models. Spacious selling rooms have been arranged for required privacy. Facilities for the showing of collections are provided for by means of a removable platform located at one of the archways; from this point the manikins may be seen to advantage from all parts of the room.

SEVENTH FLOOR

"*Debonnaire.*" This floor was set apart for college students. Instead of fixed departments with established walled units, the designs called for clearly defined architectural lines to give the necessary segregations. The walls and furniture are treated in black and white relying upon color notes for relief. The furniture is of metal.



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Looking from foyer into open show window. Walls of paneled pearwood with horizontal liners of Benedict nickel. Rubber tile inlaid floor.

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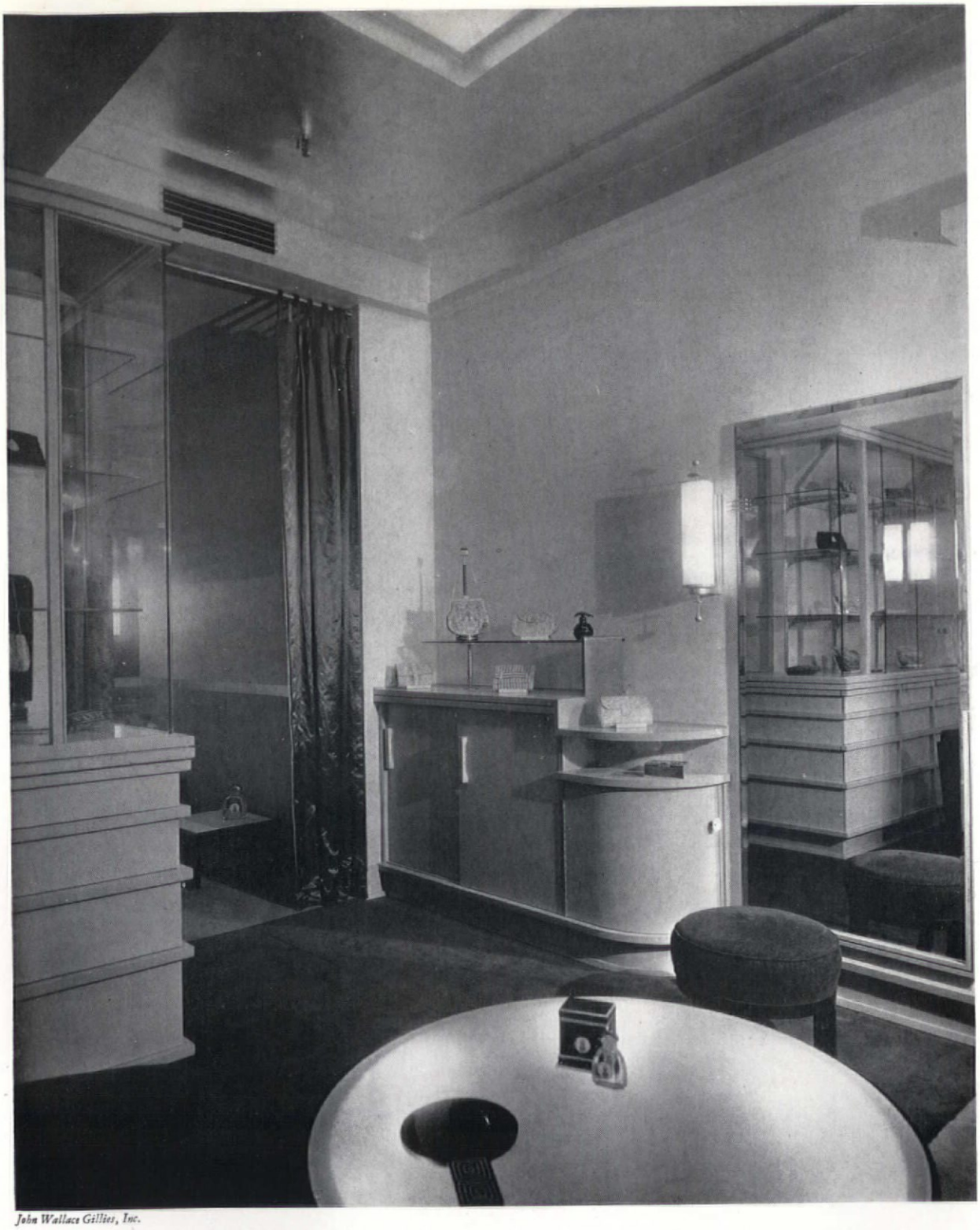
Elevator wall. Doors, casings and trim in varied finishes on Benedict nickel. Walls lined with Crocidolite marble.



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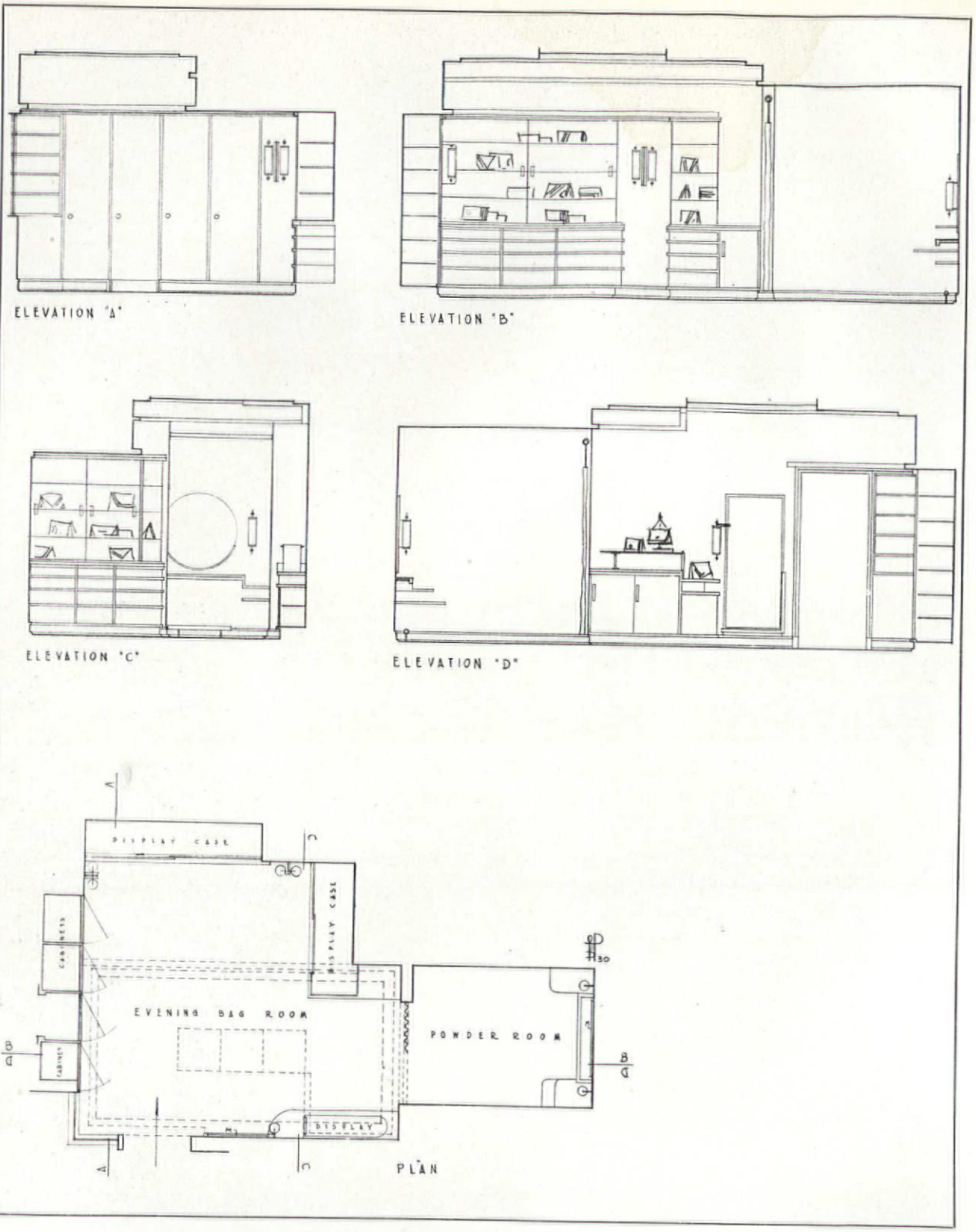
Main floor, inside accessory and evening bag room with adjoining powder room. Low display table with illuminated glass top.



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Working details of evening bag room, main floor.

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Main floor, looking into accessory and evening bag room. Corner treatment in clear plate glass with horizontal molds.

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Third floor, coat department. Walls of natural cork inlay. Wainscot panel in zebrawood with vermilion wood inserts.

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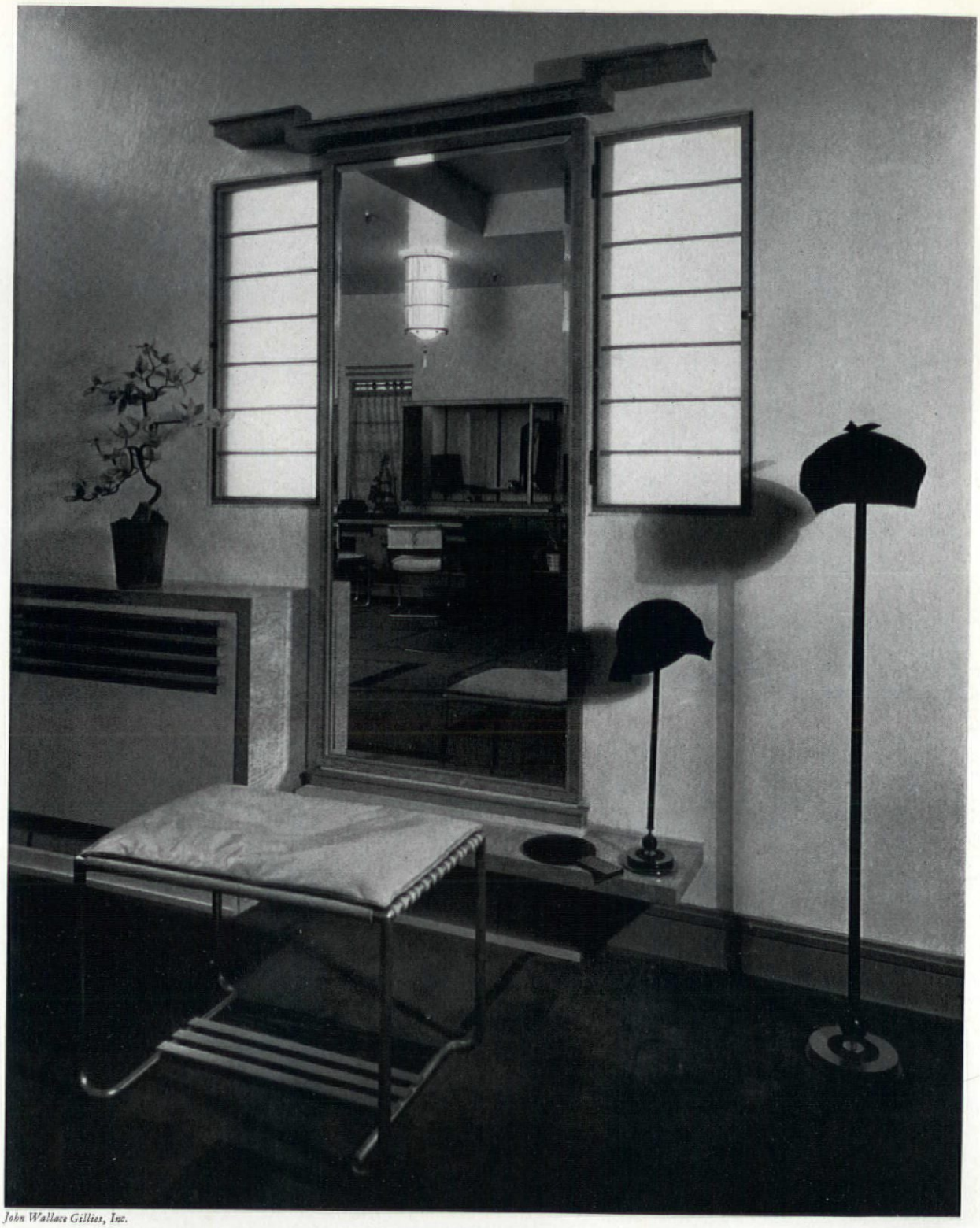
Sixth floor, custom dress salon and display niche. Applied ornamental strips of Benedict nickel. Recessed display case.



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Seventh floor, "debonnaire" shop. Millinery try-on mirror with concealed sidelights.

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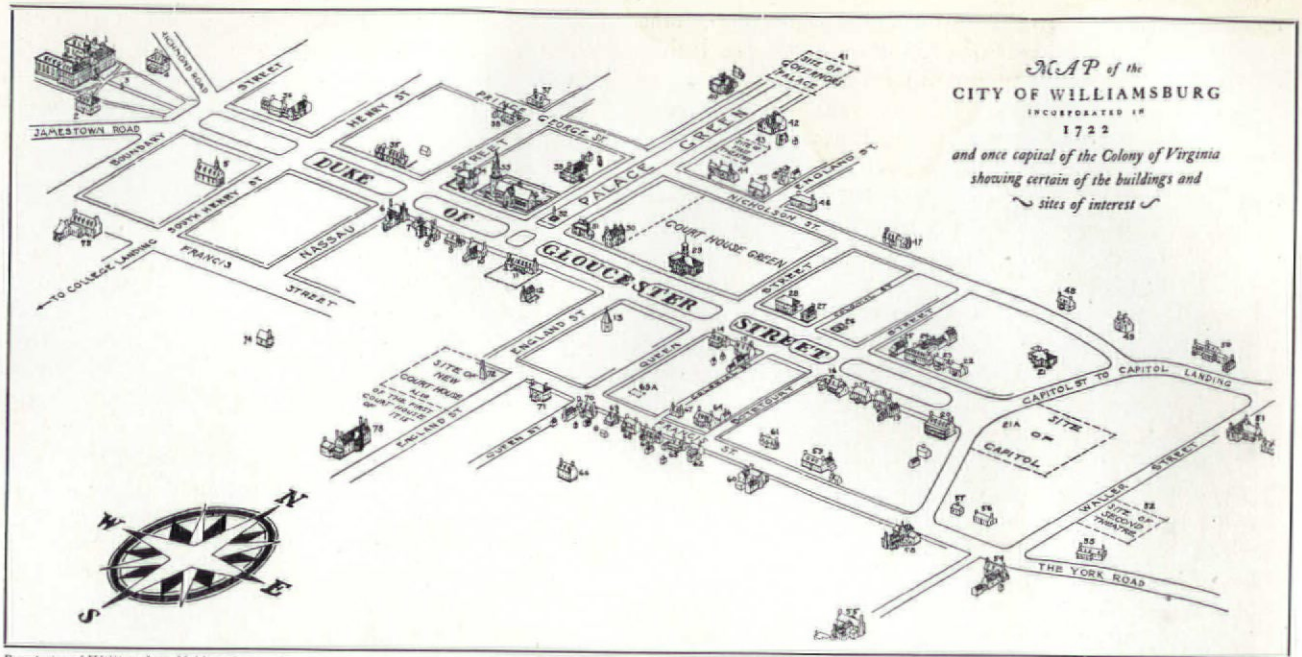
DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

Seventh floor, "debonnaire" shop. Millinery display case in English oak with lacquer trim.



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Drawn by Harold R. Shurtleff

THE EXCAVATIONS AT WILLIAMSBURG

The restoration of Williamsburg to its appearance in Colonial times, as to public buildings, residences, streets and gardens, is based on exhaustive research into documentary evidence both in this country and abroad and on extensive excavation and archaeological study of the site itself. The lapse of somewhat more than two centuries has brought about great changes in the aspect of the city, and during this time much of what actually exists in the way of records has been forgotten as well as what the earth may hold. Although for the most part the monuments are standing today, more or less altered in form, there are instances where only foundations remain, lying sometimes as deep as six feet below the modern grade. Preliminary to the restoration of any monument, all possible evidence of both a literary and pictorial character is gathered, the plaster is removed from the walls that may be standing and usually the whole site is laid bare by excavation. Minute examination of the existing walls and foundations determines which portions are original and reveals a wealth of information as to doors and windows, long ago filled in and lost beneath subsequent coats of plaster. Several distinct levels are often discerned which correspond to the periods of our history, and thorough excavation invariably brings to light many remains, such as unsuspected portions of the original building or subsidiary structures, all vestiges of which had disappeared. The documentary material and the evidence of the walls themselves, freed from the encumbering additions of later years, supplement and frequently verify each other, and with the remains uncovered by excavation lead to a full realization of the building as it once stood.

The archaeological work carried on in connection with the restoration may best be described in the specific instance of the "Wren" building of the College of William and Mary, where the results were most pertinent to a comprehensive understanding of that important monument. This was the first opportunity for any exhaustive archaeological study of the building, as it had been in almost continuous use since 1695; moreover, literary references of an architectural character are relatively few in number and barely outline its long and chequered history, while for certain periods they are non-existent. After the vines which practically covered the exterior walls had been cut away and the plaster on the walls of the interior had been entirely removed, there was brought to light a complicated variety of masonry representing a complete and unbroken archaeological history of the building from its foundation down to the present time. Upon close examination, the four periods of its building history were distinguished as well as certain minor operations that had taken place within these periods. The evidence confirmed the contemporaneous pictorial documents and explained several literary references that hitherto had not been quite clear. At certain points, the walls were laid

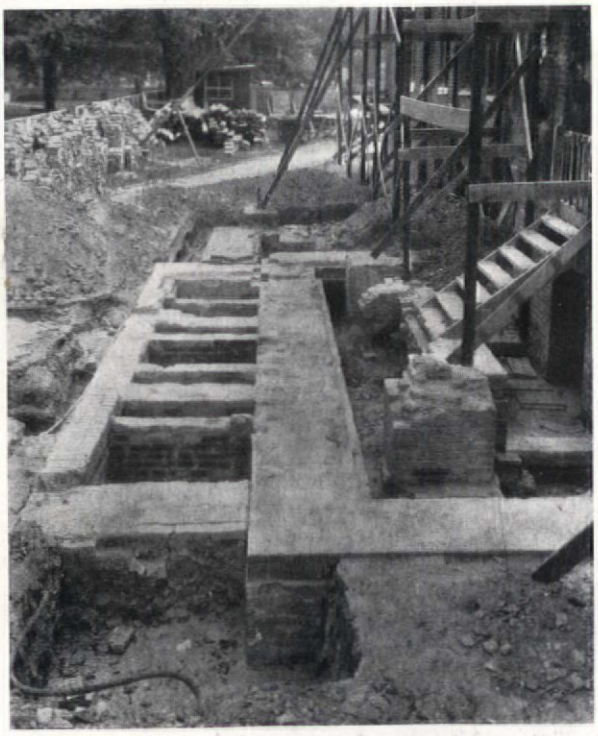
Editor's Note: The restoration of Williamsburg has been made possible through the generosity of Mr. John D. Rockefeller, Jr.; Perry, Shaw and Hepburn, Boston, are the architects; Todd and Brown, New York, are the contractors.

bare to their footings, and trenches were run to some distance in all directions to exhaust the possibility of evidence in the surrounding area.

The foundations of additions that had been made at various times were uncovered, as well as those of a portion of the first building which had apparently been buried since 1705. The latter remains represented a continuation of the north wing and gave the first indication that this wing had originally been longer; they were very well preserved and included a staircase which admitted to the basement of the north wing from the outside. In the south end of the building, the burnt wooden threshold of a doorway was found at some distance below the modern grade. The doorway was very important in the original building and is frequently mentioned in the literary references; after the fire of 1705 it was filled in and all evidence of it was lost. This threshold, indicating the original grade of the building, led to the establishing of the corresponding grade at the main entrance and to the subsequent solution of the difficult problem of the original entrance itself and its relation to the façade and to the plan of the building. The pavilion, at this point, though so carefully bonded into the wall that it appears to be contemporaneous with it, was found to be an addition resting in part on what would seem to have been supports for the original staircase. As a result of these discoveries, the only picture known of the first building, one that has long been held suspect by some scholars, was proved to be essentially correct. Four subsidiary structures mentioned in the literary references were found in the surrounding area, while at the rear between the wings an interesting discovery was that of the actual kilns in which the bricks for the building had been burned, verifying the statement in the building accounts that "the bricks were made on the spot."

The original or first building was considerably damaged by fire shortly after its erection and the second building received certain architectural additions, in particular the chapel or south wing, which corresponded to the wing on the north. In this form the building passed the greater part of its history and it is to this form that it is being restored, the internal evidence of the structure itself along with the information derived from excavation and research leaving no doubt as to an accurate restoration. The additions that represent the third and fourth periods, slight but nevertheless conspicuous enough to change the appearance of the building, have been removed. Before any demolition was begun, the building was photographed throughout, and as the work progressed, a complete photographic record of all evidence was maintained, including that revealed by excavation; likewise, a complete set of archaeological drawings was made showing the four periods and incorporating as well the remains that had been excavated. Every effort has been put forth to prevent the loss of evidence, whatever its period, while in the restored building a construction calculated to protect the original walls and to relieve them of all weight assures their preservation.

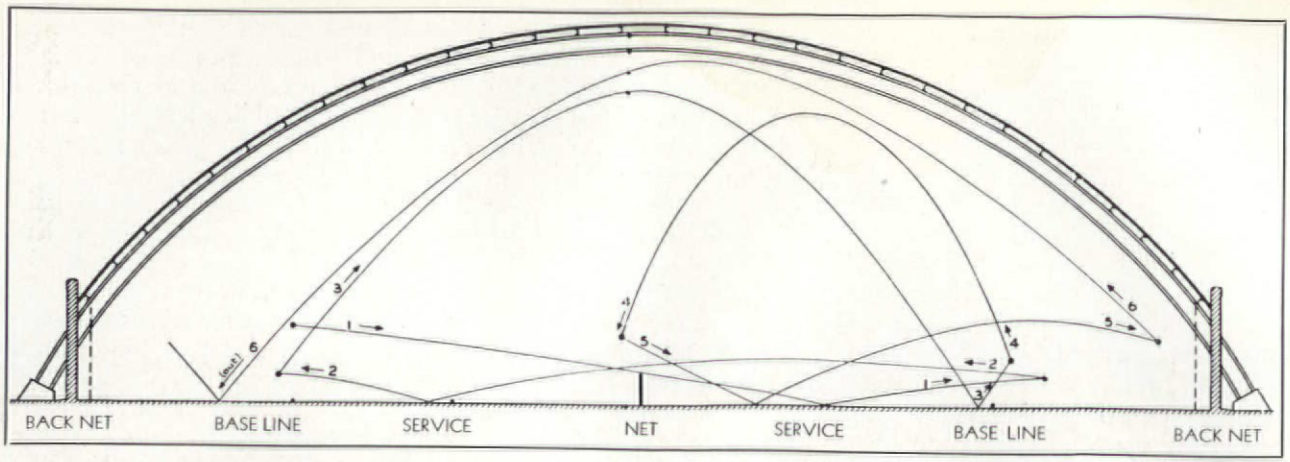
PRENTICE DUELL



Layton's Studio. Permission of Williamsburg Holding Corporation

THE WREN BUILDING
EXCAVATED AREAS

LEFT: AT FRONT OF BUILDING
ABOVE: AT REAR



CROSS-SECTION, TRAJECTORY TYPE OF INDOOR TENNIS COURTS BUILDING

Diagram shows how roof lines inclose space required normally in play. The flights of the ball during a rally with unusually high lobs and bounds are shown: 1. Serve; 2. Low return to mid-court; 3. Lob to back court; 4. Weak return, short to forecourt; 5. Smash to mid-court; 6. Attempted return, out beyond base line.

TRAJECTORY TENNIS COURT BUILDINGS

GAVIN HADDEN, CIVIL ENGINEER

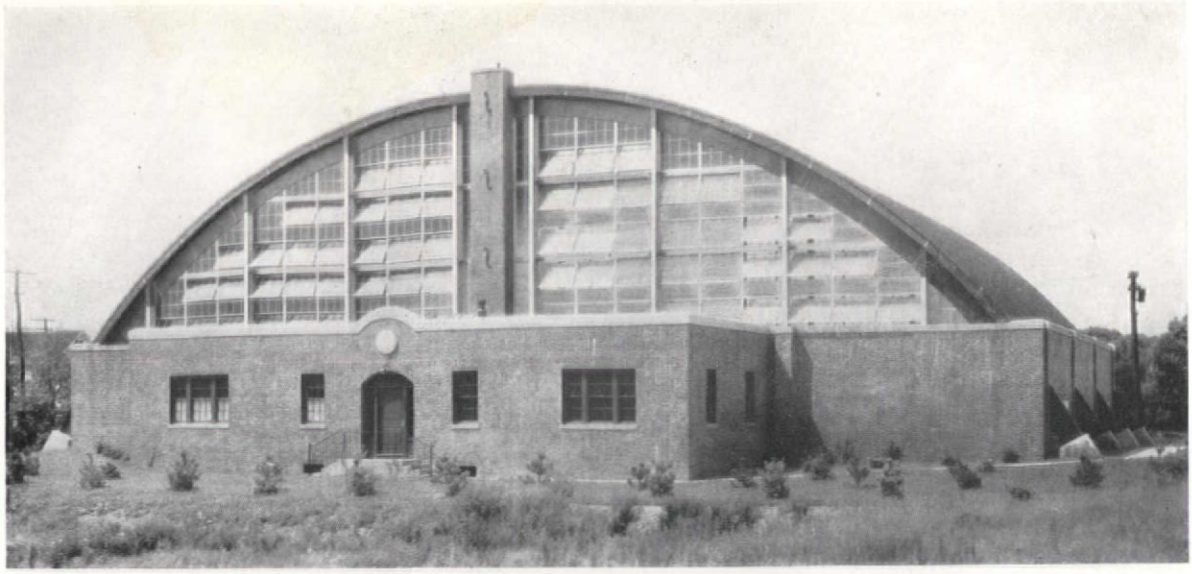
The most notable departure from orthodox ideas of design is the arching of the roof of the building lengthwise rather than transversely. Two major advantages are apparent at once: first, the possibility of constructing the side walls almost entirely of glass; and second, a maximum ceiling height at the center of the court, with a minimum at the ends and an equal ceiling height entirely across the court at any given point.

The sides of the building are enclosed with figured glass, and the playing area lighted entirely by natural light. There is no glare. In addition, the absence of skylights eliminates the confusing light and dark patches found in earlier tennis court buildings.

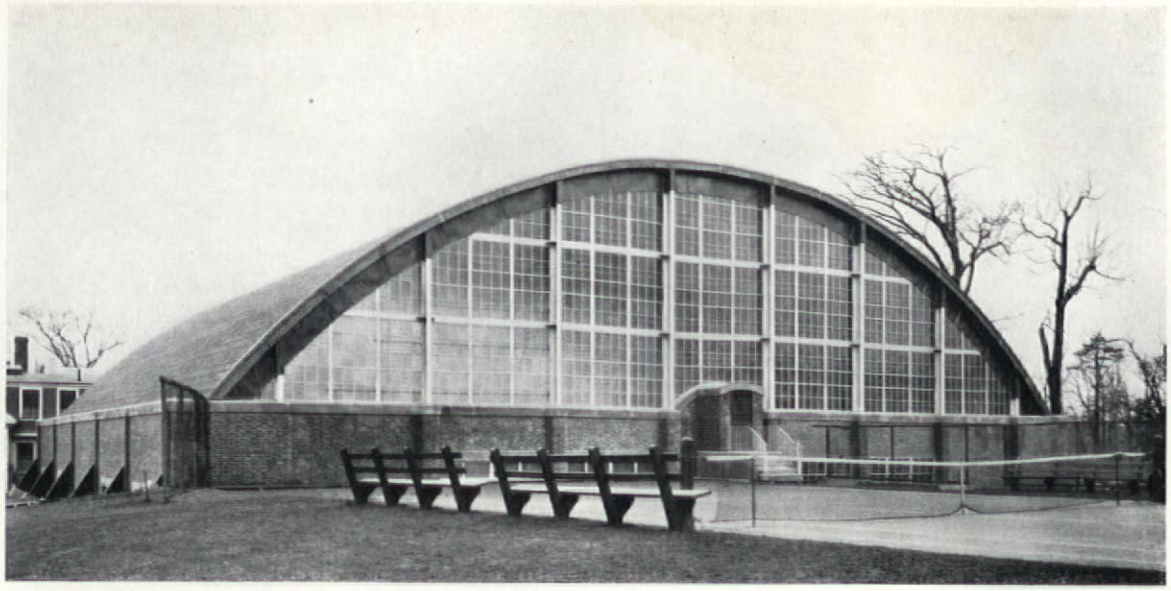
The adaptability of the longitudinal arching to the requirements of the game will be seen readily by a study of the longitudinal section. It should be noted that it was the game itself which really determined the shape of the building.

Other advantages and innovations are found in these tennis buildings. Among these is the application of aluminum paint to the upper part of the ceiling to give a background simulating outdoor conditions. At the ends of the courts green is used for a similar purpose. Artificial lighting, using almost any system, is usually installed for night play. This can be started with a minimum of lighting, costing little to operate, and increased in amount if desired, provision easily being made for future addition. Louvres at each end of the building allow air but no light to enter. The purlin channels are reversed so that they will not become ball traps.

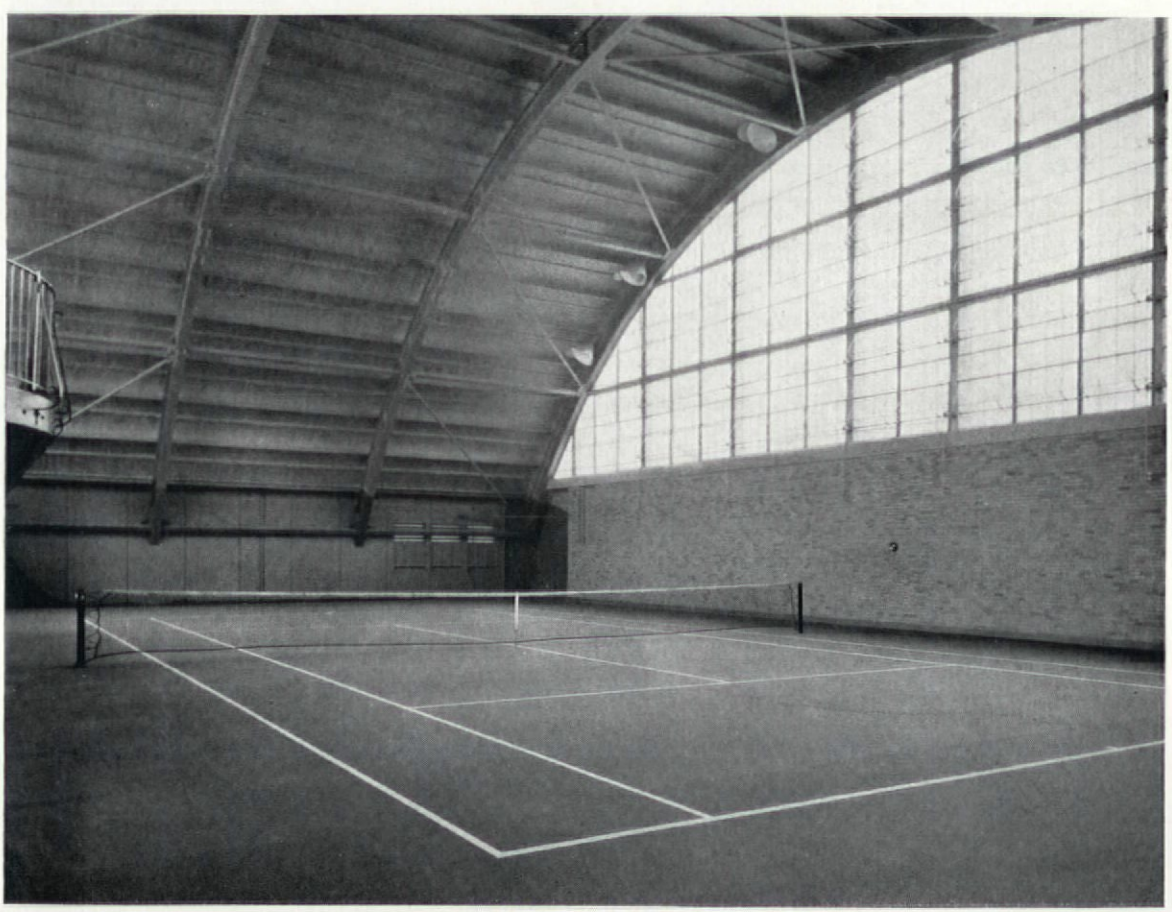
Three buildings of this type have been built. Of interest is the fact that each court was built for a different type of client: the first, at Brookline, Mass., for a large country club; the second, at Beverly, Mass., for a small group of suburban residents; and the third, at Holmdel, N. J., for a single individual. The first encloses two courts, the others one court. The Brookline and Beverly courts are similar in that both have a clay playing surface which is at the general level of the surrounding ground. The Prentice court at Holmdel is sunk 8 feet below the average level of the ground outside and has for its playing surface a special type of floor with a cork carpet, laid so as to give uniformity and the correct amount of resiliency. All the buildings have cantilevered balconies for the convenience of a small number of spectators. The court at Brookline has two, one at each side, with umpire chairs suspended from the balconies on the center line of the courts. Dressing facilities for the Brookline court are provided in a separate building; for the other courts additions to the main building were constructed to house these and other facilities. The Beverly court, for instance, in addition to locker and shower rooms for men and women, has a club room of comfortable size with a large open fireplace, a separate telephone room and a kitchenette.



TRAJECTORY TENNIS COURT BUILDING
BEVERLY, MASSACHUSETTS
GAVIN HADDEN, ENGINEER



BROOKLINE, MASSACHUSETTS



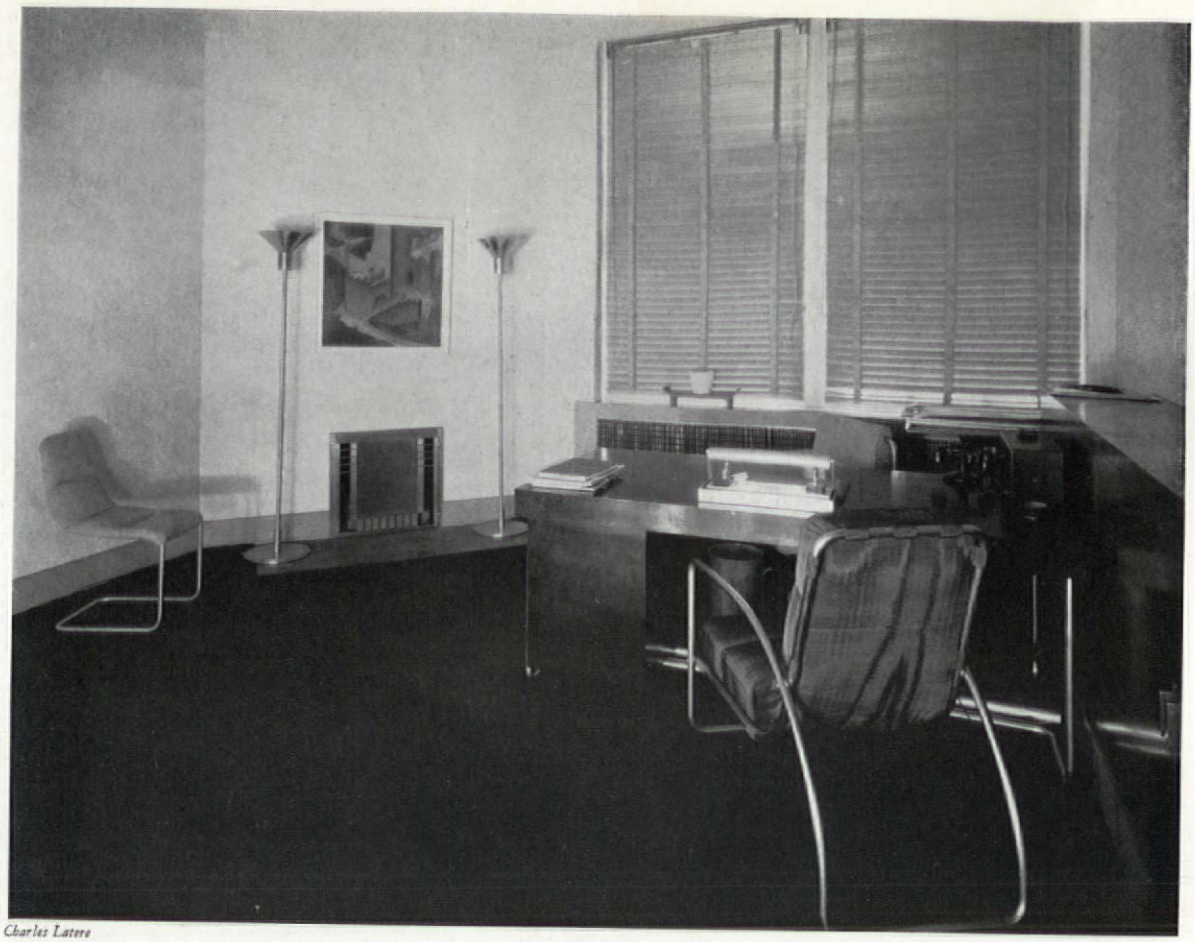
PRENTICE COURT
HOLMDEL, NEW JERSEY
GAVIN HADDEN, ENGINEER

PORTFOLIO OF OFFICE INTERIORS

Charles Latere

ADVERTISING OFFICES OF LENNEN AND MITCHELL
PRIVATE OFFICE OF JOHN DE VRIES
NEW YORK CITY
PERCIVAL GOODMAN, INC., ARCHITECTS

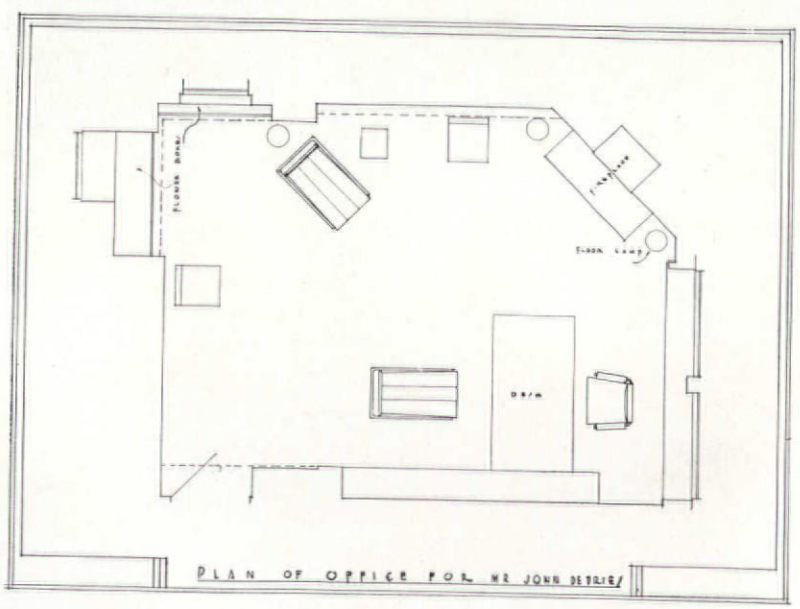
Walls in plaster, painted pale yellow. Ceiling white. Covers in tan and dark brown. Floor carpeted in black. Desk in black bakelite. All metal work of high polish nickel.

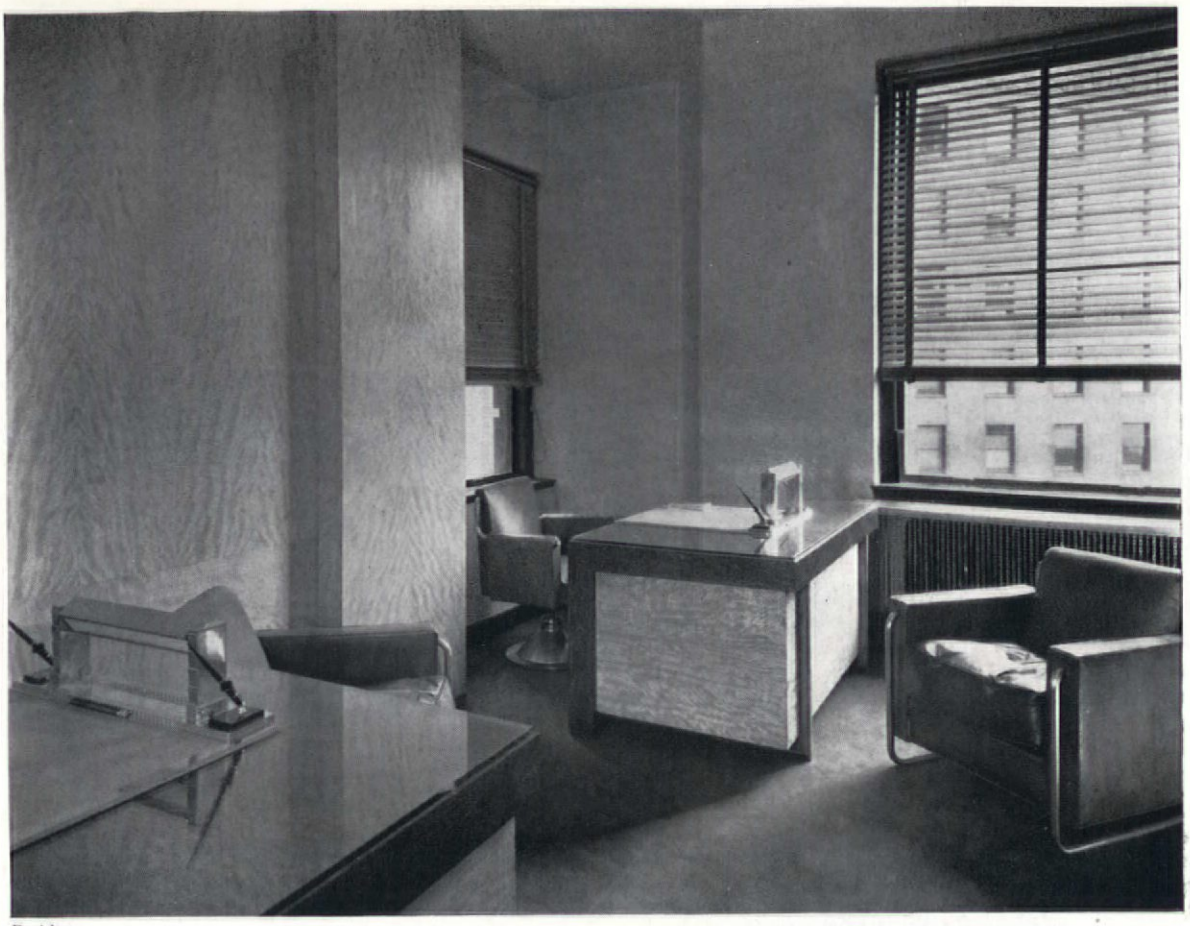


Charles Latere

ADVERTISING OFFICES OF LENNEN AND MITCHELL
PRIVATE OFFICE OF JOHN DE VRIES
NEW YORK CITY
PERCIVAL GOODMAN, INC., ARCHITECTS

Chairs upholstered in tan and brown. Flower box under windows in high polish nickel plate and brilliant red.

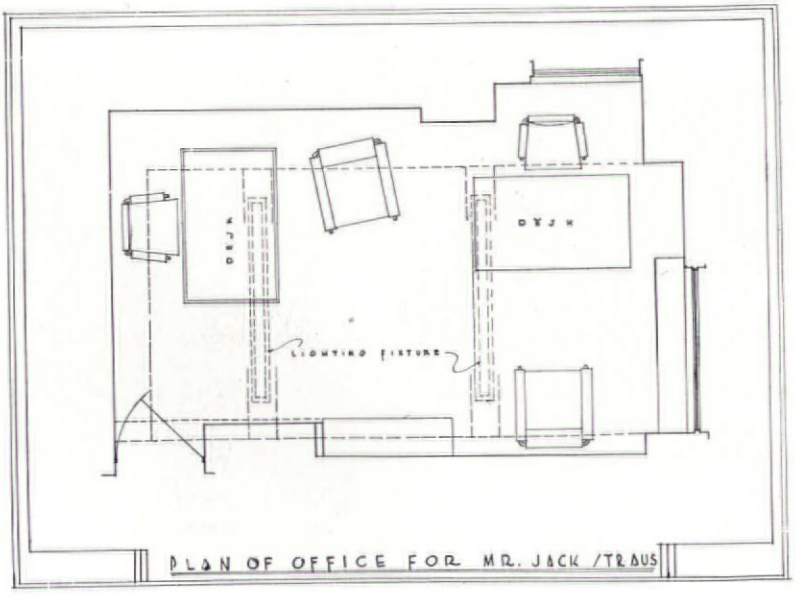


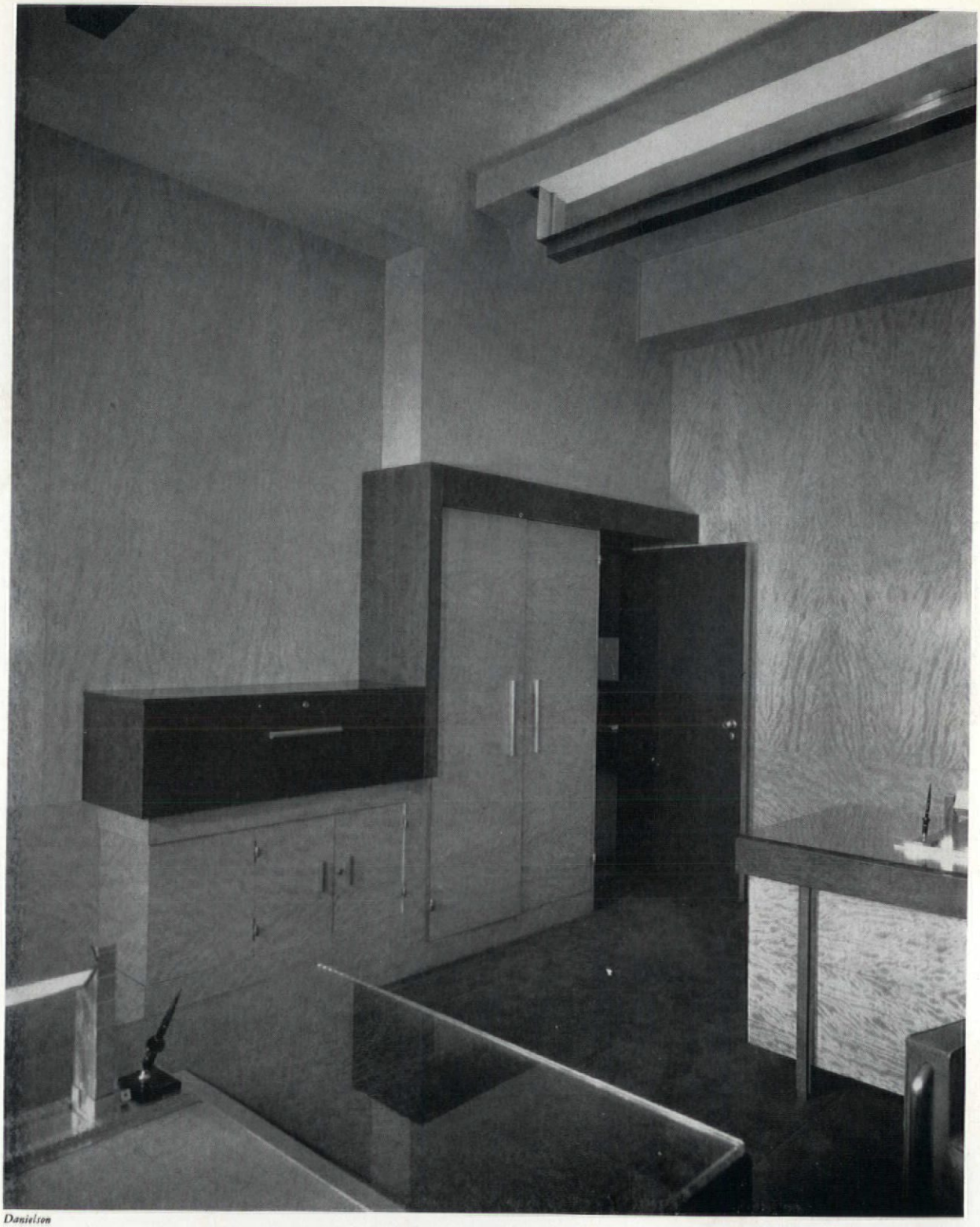


Danielson

BROKERAGE OFFICES OF STRAUS AND COMPANY
NEW YORK CITY
PERCIVAL GOODMAN, INC., ARCHITECTS

Floors carpeted in brilliant green. Furniture upholstered in leather, same color as carpet.

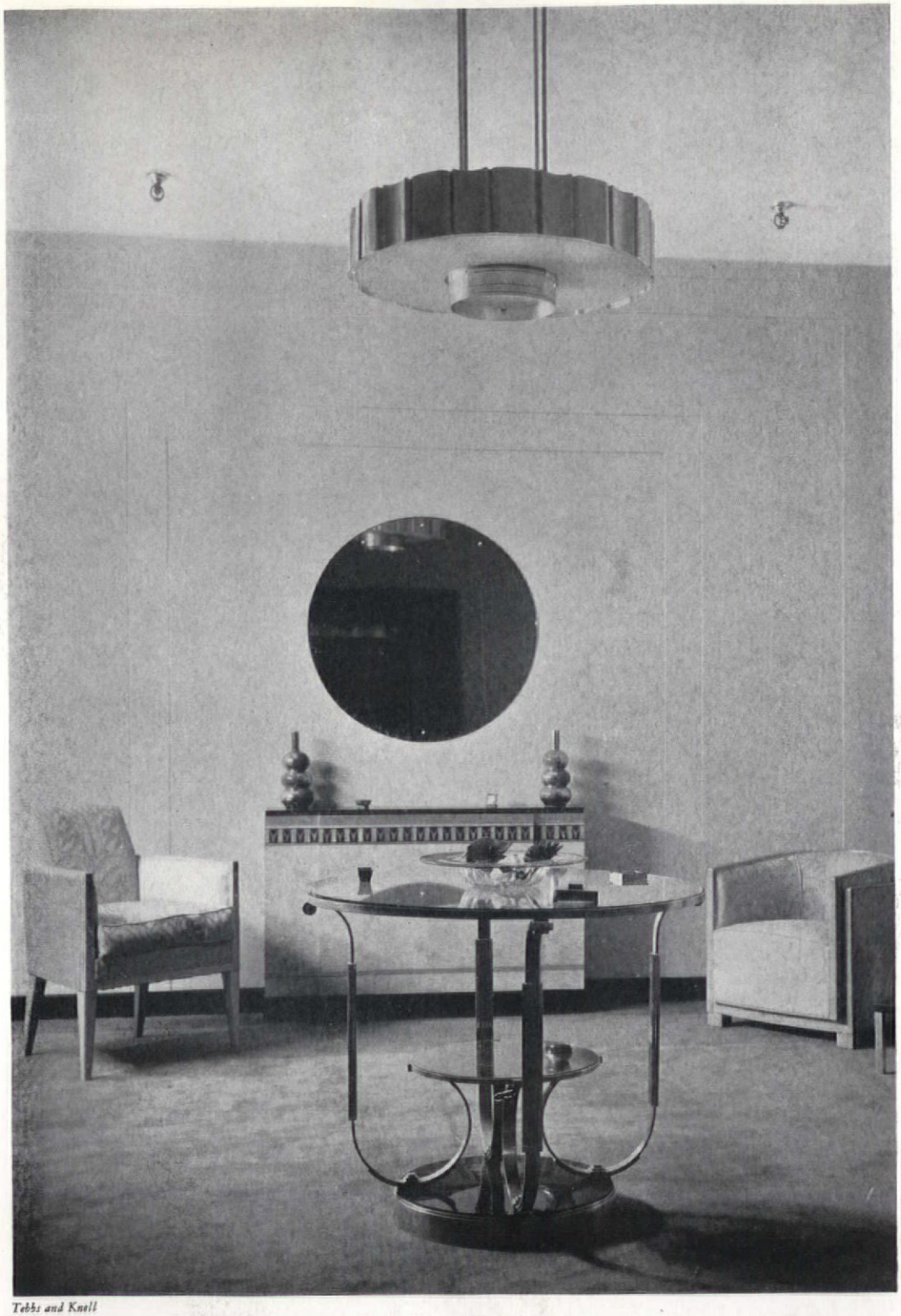




Danielson

BROKERAGE OFFICES OF STRAUS AND COMPANY
NEW YORK CITY
PERCIVAL GOODMAN, INC., ARCHITECTS

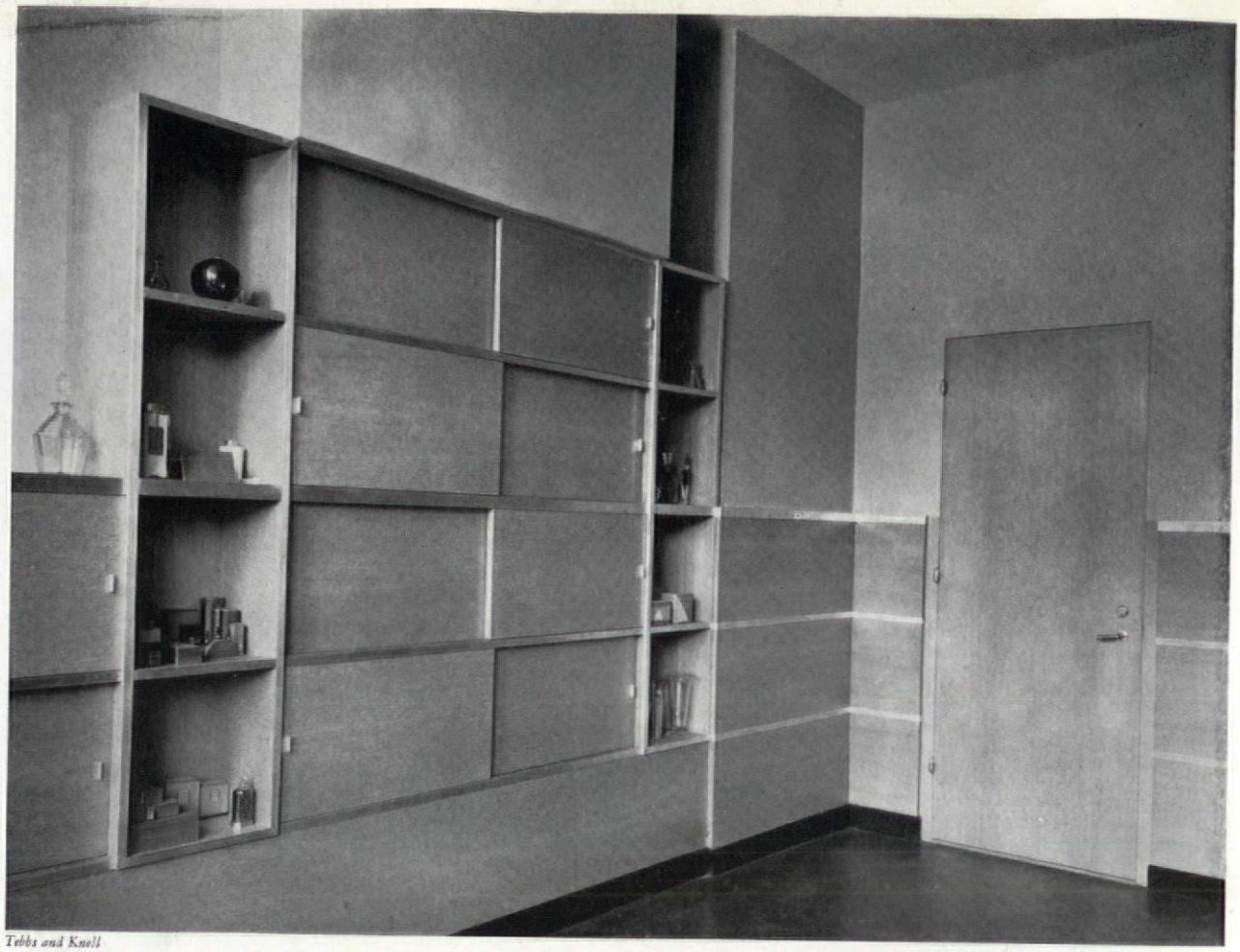
Walls paneled in Avoidire (light yellow). Built-in cupboards in redwood burl (dark brown red). Furniture same wood as walls. Metal work of dull nickel plate; fixtures same as metal.



Tebbs and Knell

PERFUME SHOP OF BOURJOIS, INC.
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

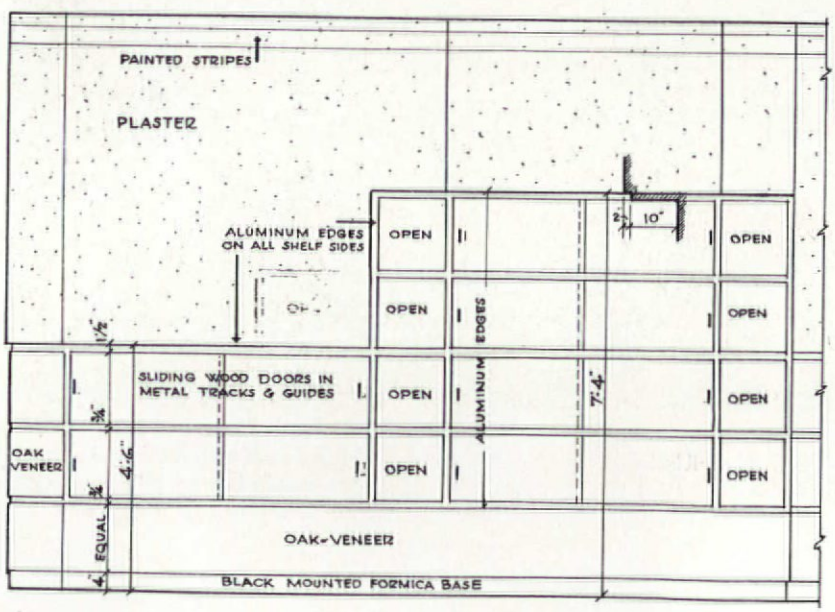
Reception room. Walls green with silver edging. Ceiling cream. Carpet two tones of gray-green.

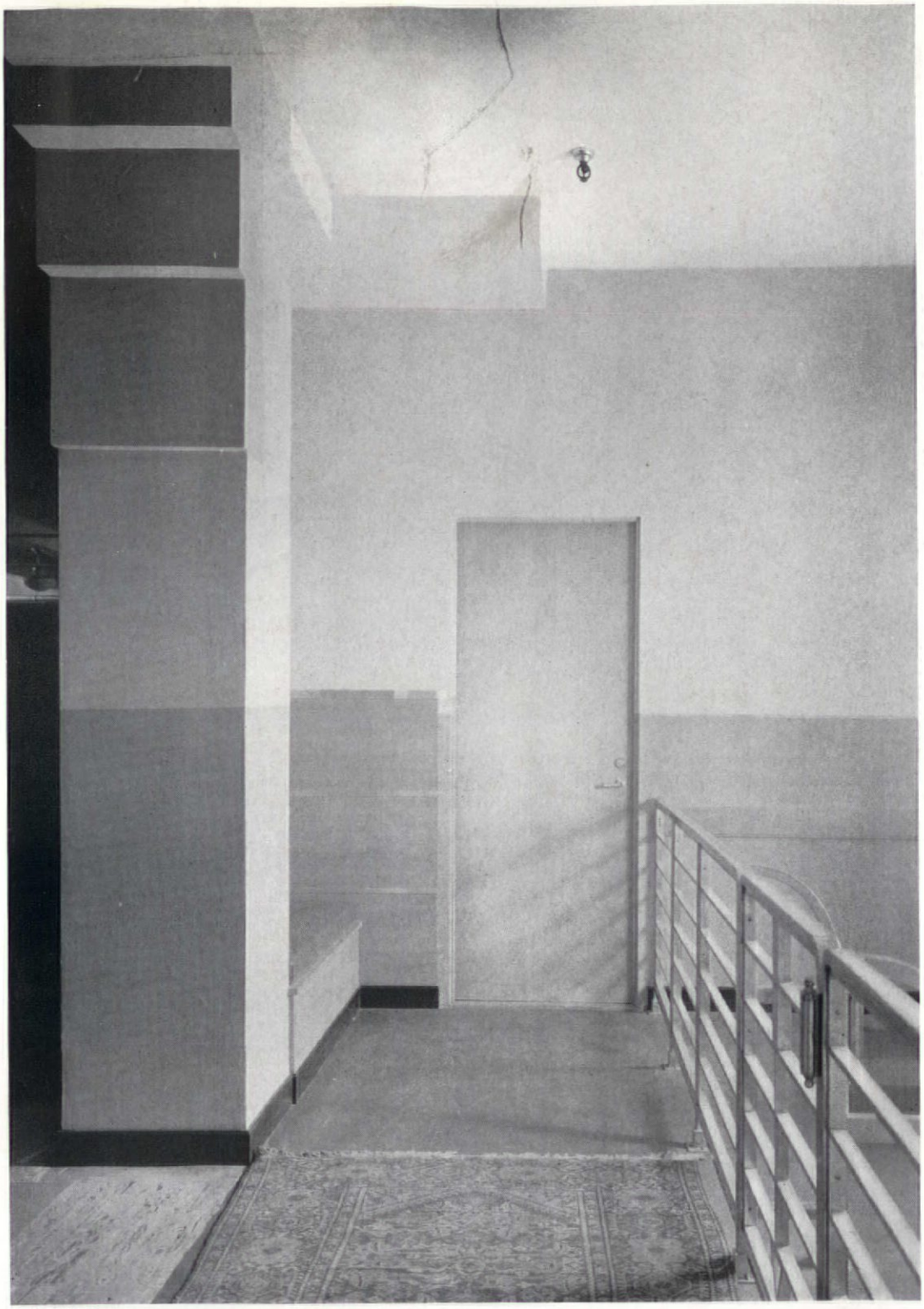


Tebbs and Knell

PERFUME SHOP OF BOURJOIS, INC.
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

Cabinets and wainscoting in natural oak and aluminum. Flush panel door of oak. Green battleship linoleum floor.





Tebbs and Knell

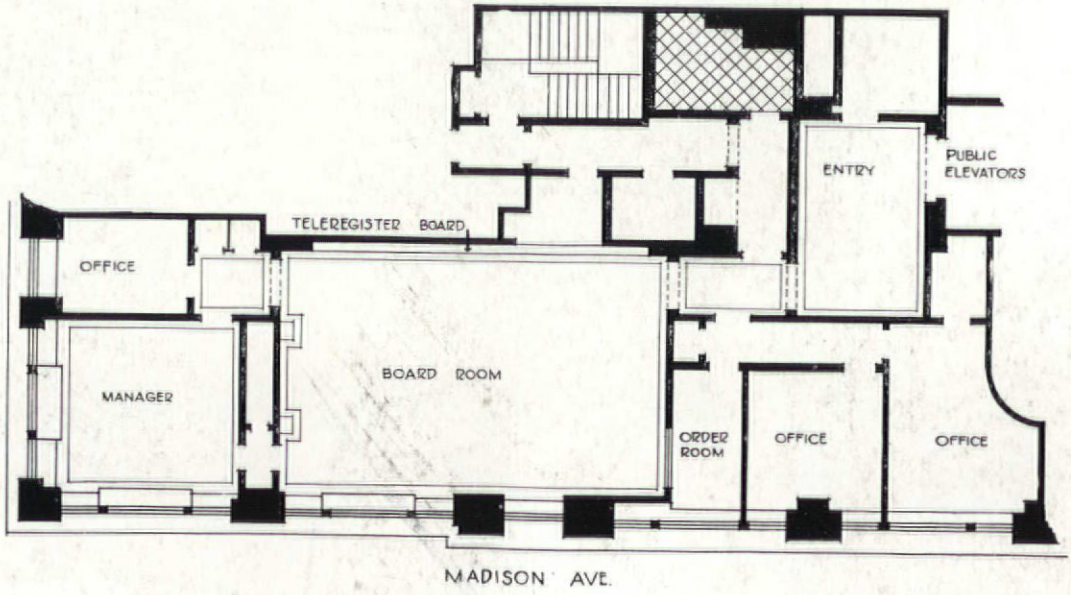
PERFUME SHOP OF BOURJOIS, INC.
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

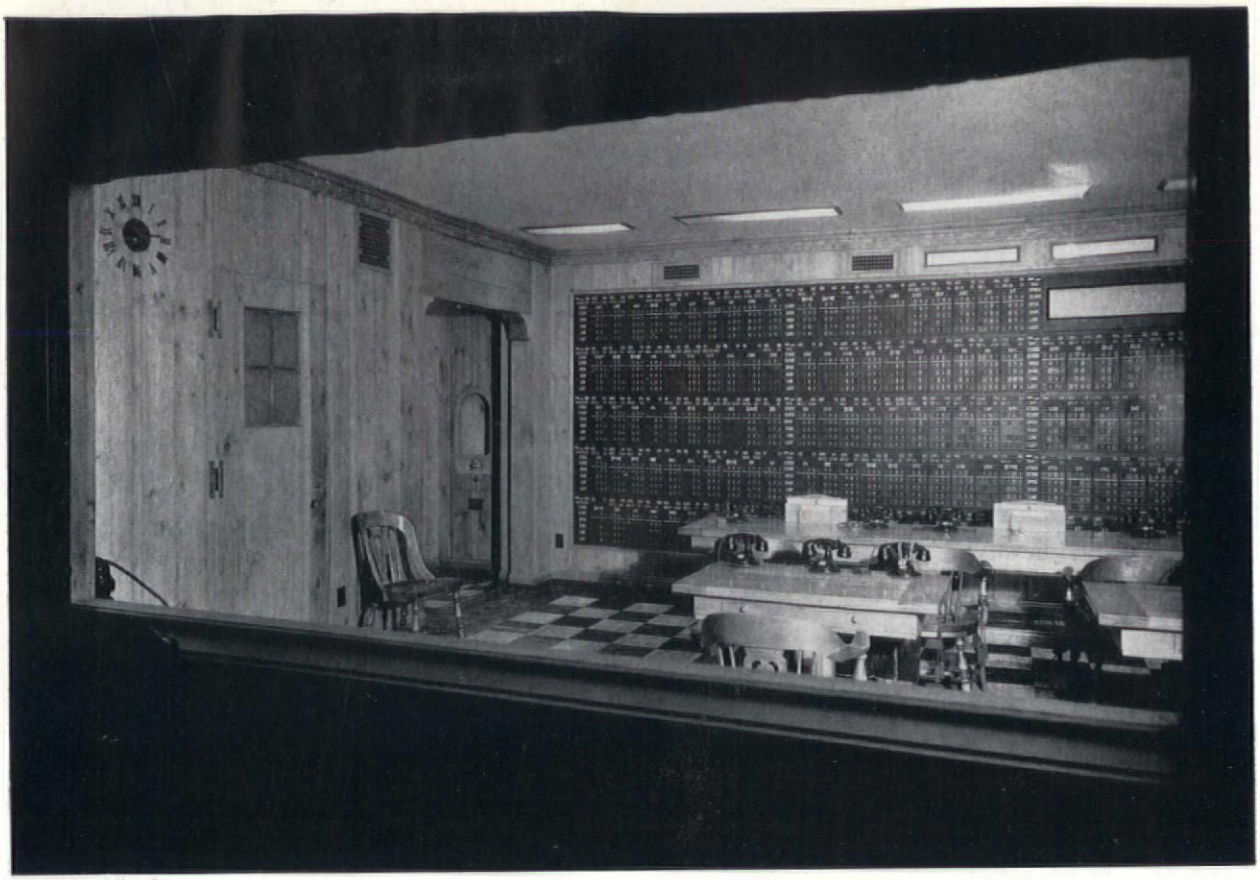
Rail of chromium and aluminum.

John Wallace Gillies, Inc.

GRUNTAL, LILIENTHAL AND COMPANY
NEW YORK CITY
EDWARD I. SHIRE, ARCHITECT

Board room of brokerage office.

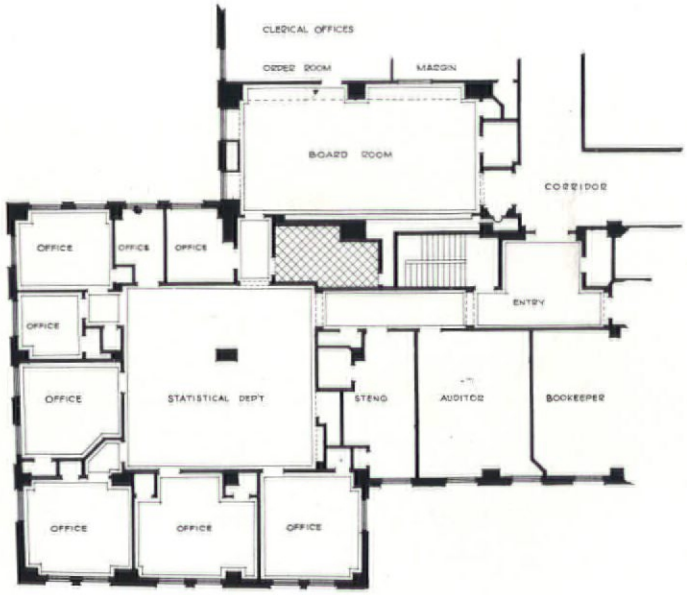




John Wallace Gillies, Inc.

NEWBURGER, HENDERSON AND LOEB
NEW YORK CITY
EDWARD I. SHIRE, ARCHITECT

Board room of brokerage office as seen from margin room.



Rattaze

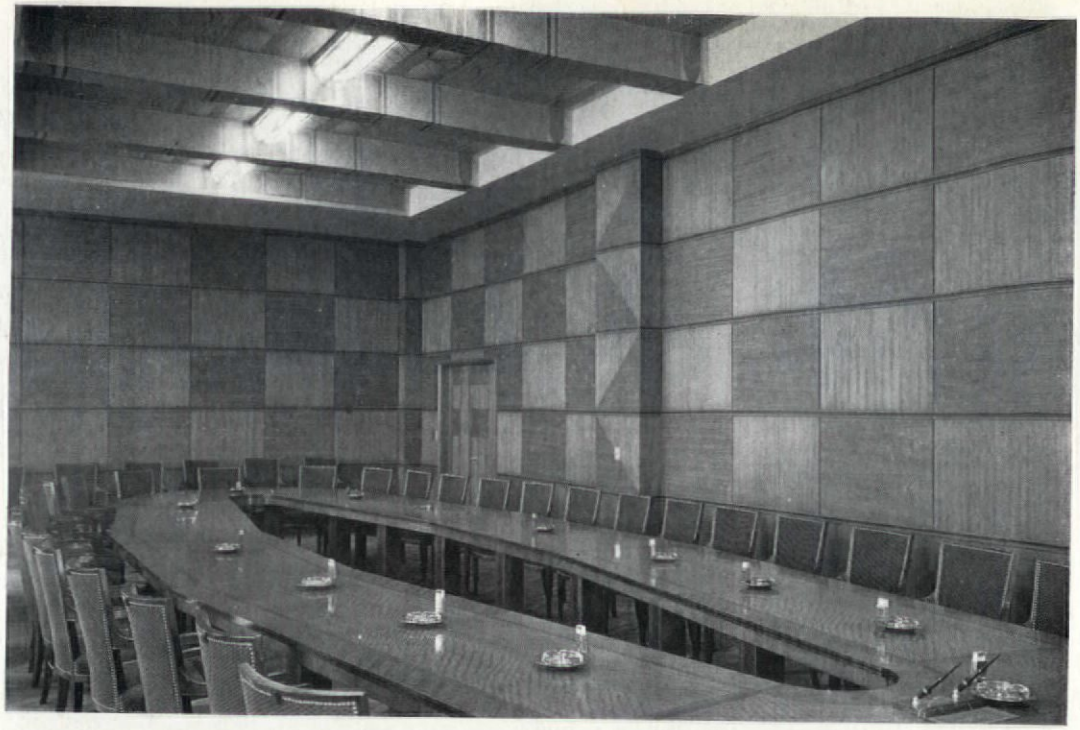
INTEGRITY TRUST COMPANY
PHILADELPHIA
PAUL P. CRET, ARCHITECT

President's office.

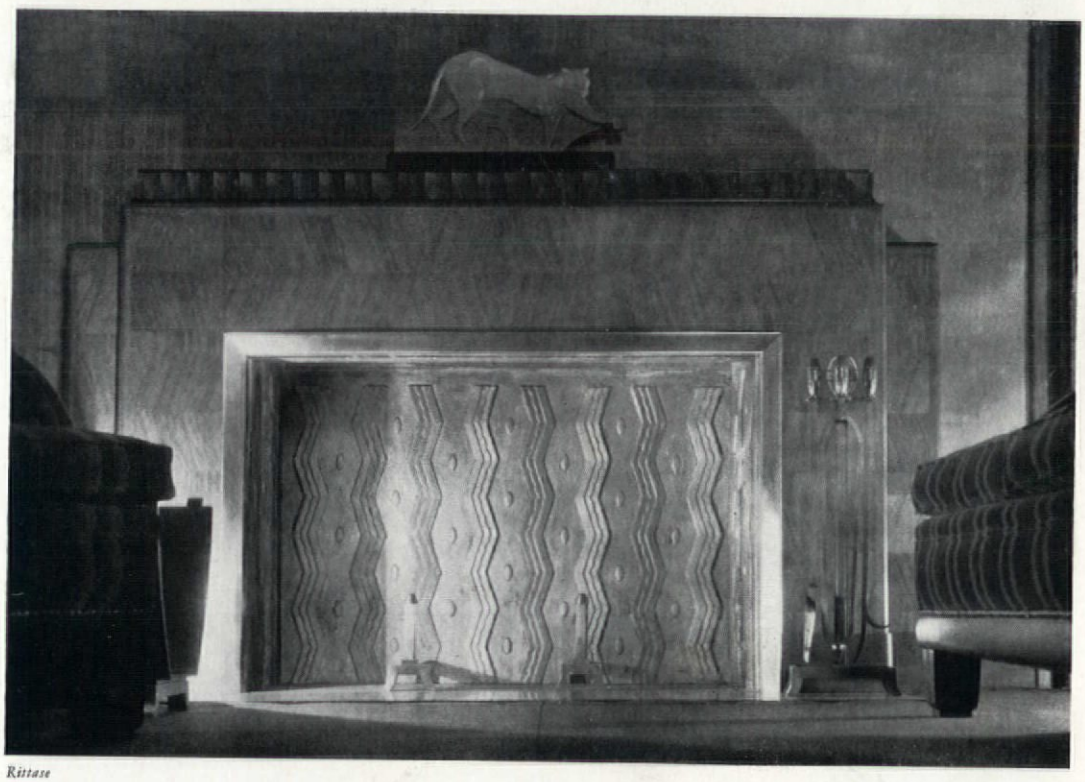
Rsttasn

INTEGRITY TRUST COMPANY
PHILADELPHIA
PAUL P. CRET, ARCHITECT

Board of directors' room.



Board of directors' room.



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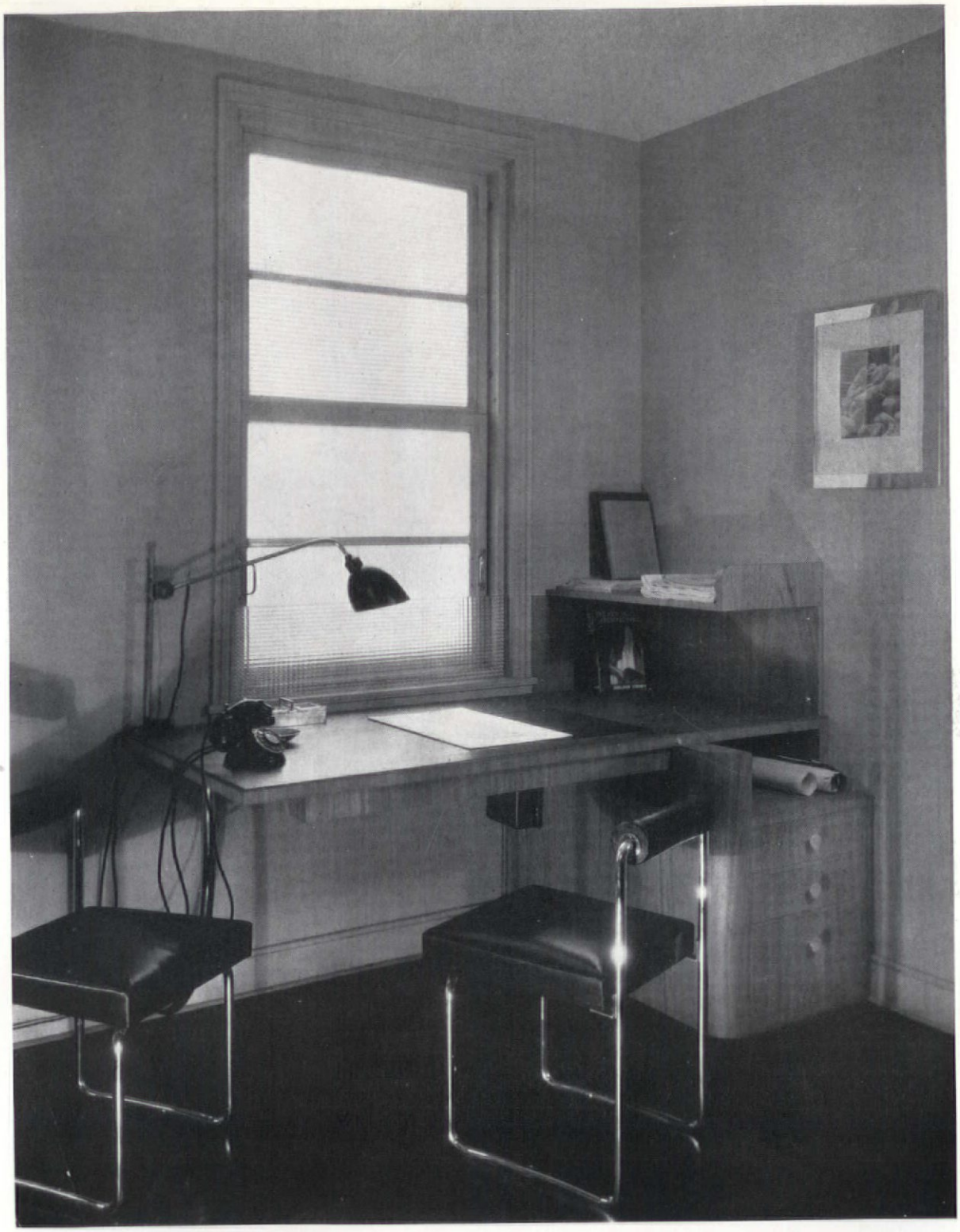
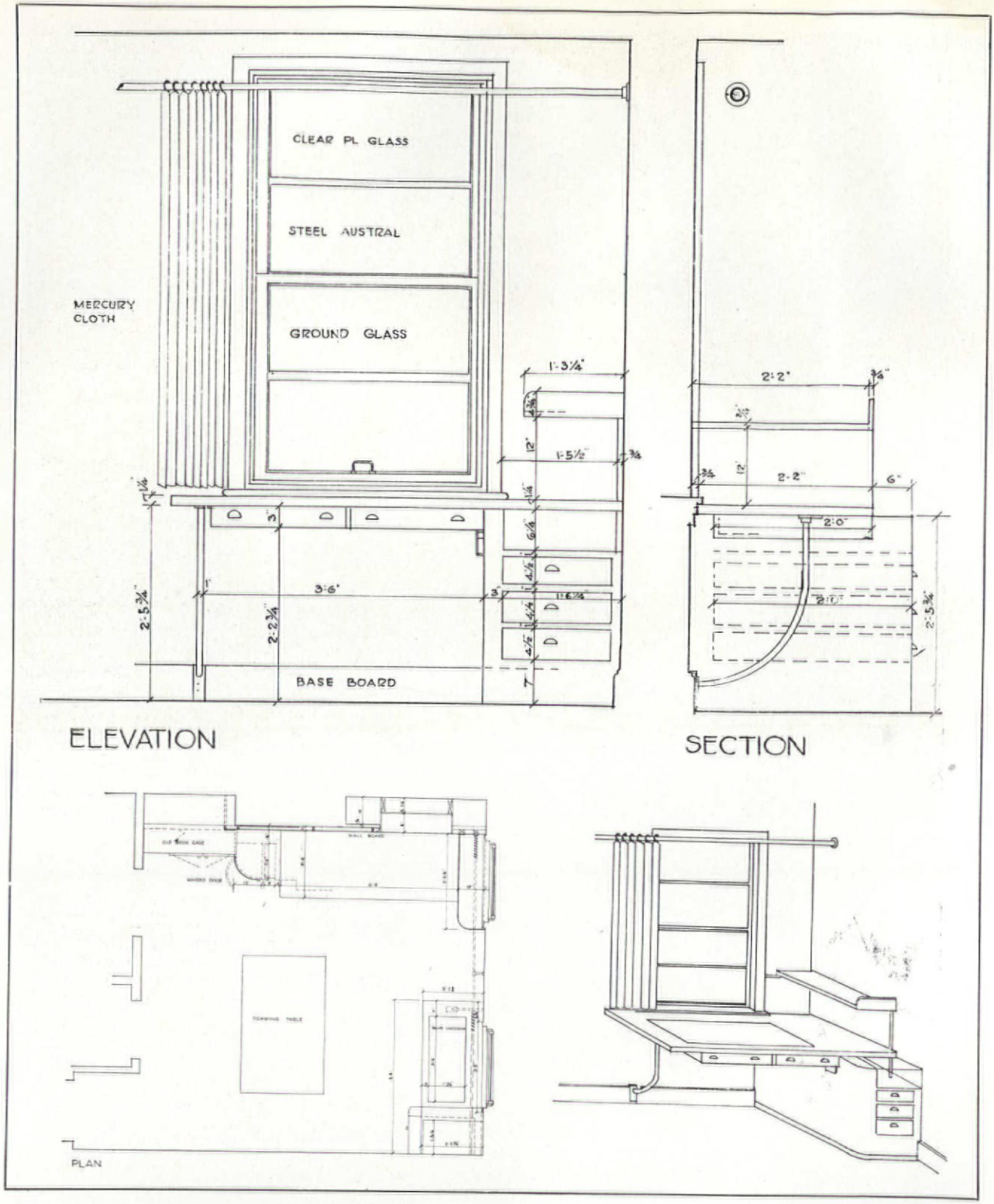
INTEGRITY TRUST COMPANY
PHILADELPHIA
PAUL P. CRET, ARCHITECT

President's office.



PHILADELPHIA OFFICE OF
HOWE AND LESCAZE, ARCHITECTS

Working details of this desk are shown on next page.



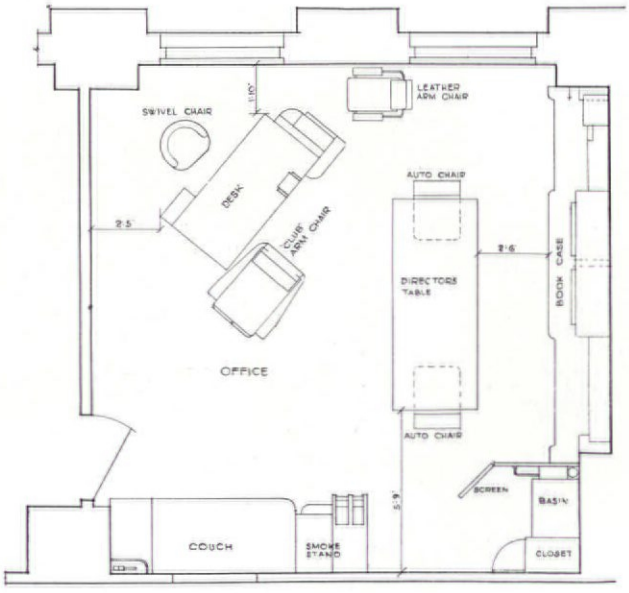
PHILADELPHIA OFFICE OF
HOWE AND LESCAZE, ARCHITECTS

Working details of writing desk.

Louis Condax

Board of directors' room.

OFFICE OF WILLIAM STIX WASSERMAN
PHILADELPHIA
HOWE AND LESCAZE, ARCHITECTS



Klette photo

WRITING DESK IN MODEL HOUSE AT BRESLAU, GERMANY
HEINRICH LAUTERBACH, ARCHITECT

Bonney

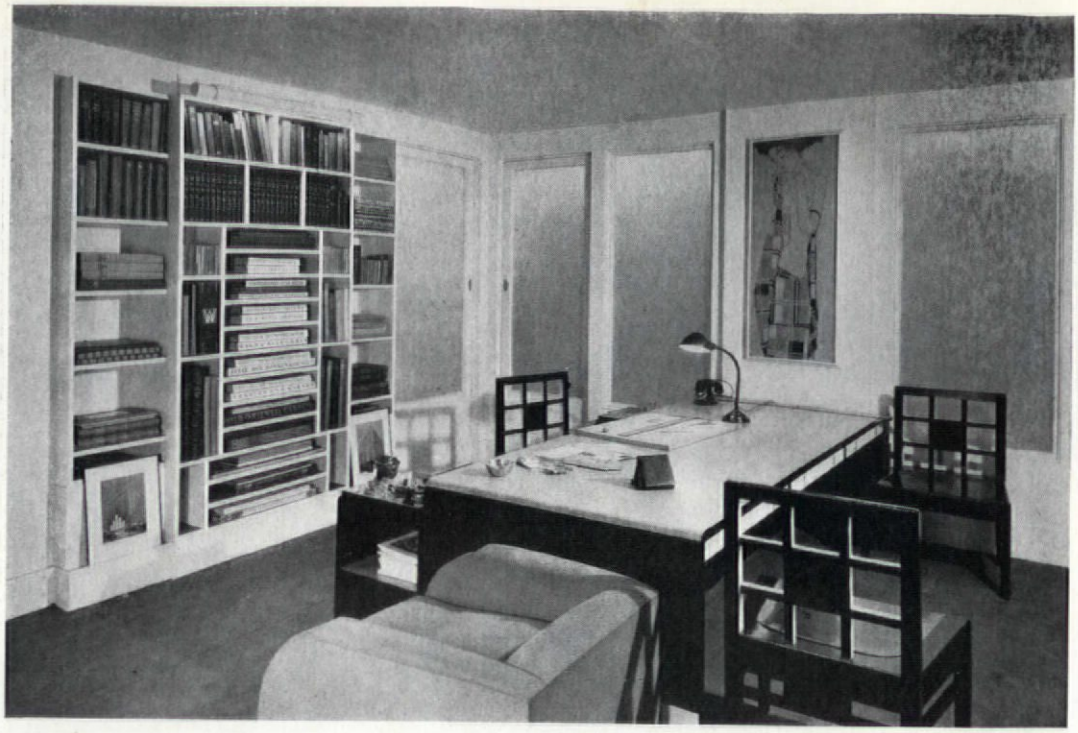
STUDIO CORNER OF HOUSE IN PARIS
DESIGNED BY SOGNOT

Furniture of mahogany and silvered metal. Chairs upholstered in red horsehair.

Nyholm and Lincoln

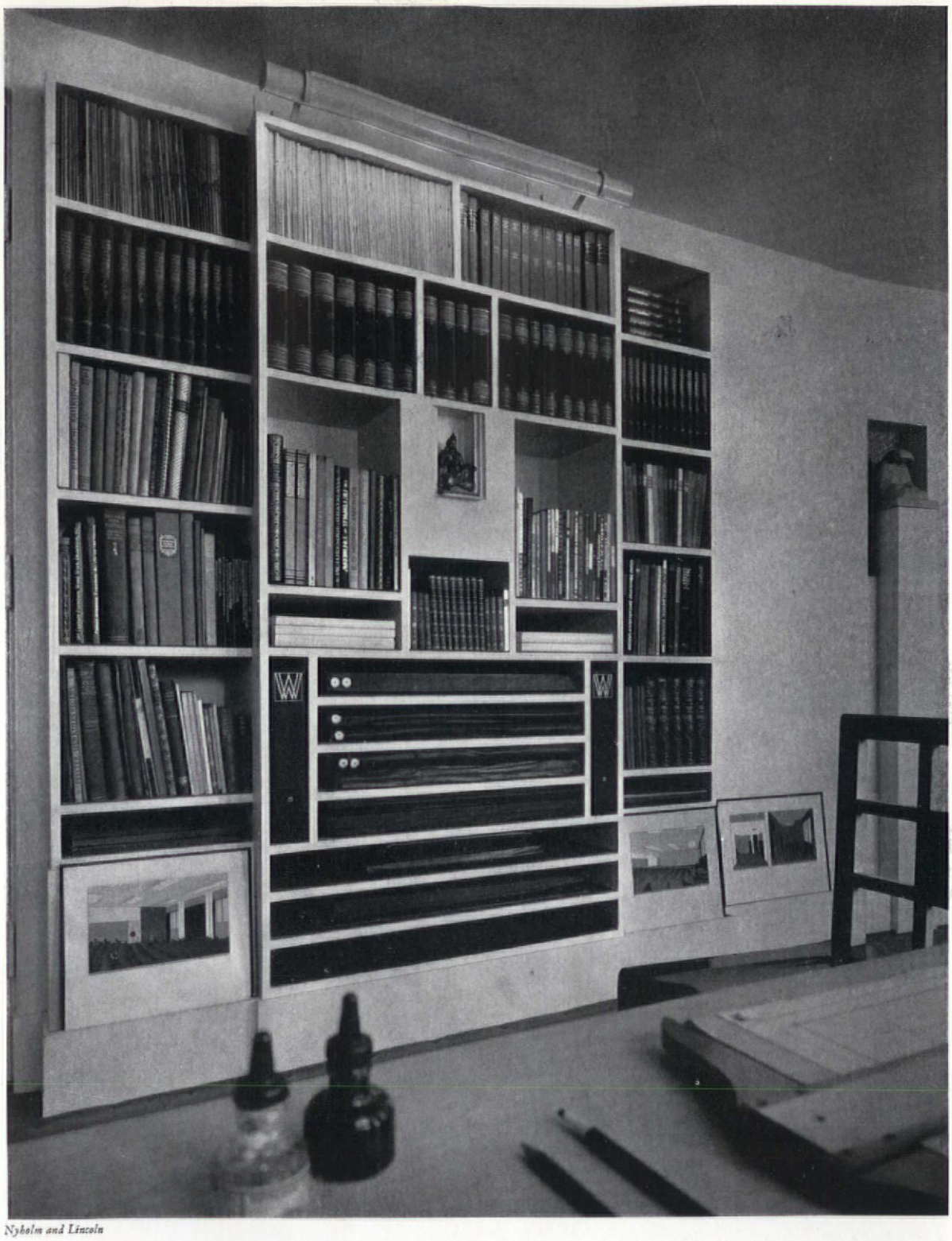
RECEPTION ROOM
OFFICE OF JOSEPH URBAN, ARCHITECT

Color scheme in black and white. Doorways and niches framed by black beaded molding.



Nyholm and Lincoln

PRIVATE OFFICE AND LIBRARY
OFFICE OF JOSEPH URBAN, ARCHITECT



Nyholm and Lincoln

PRIVATE OFFICE AND LIBRARY
OFFICE OF JOSEPH URBAN, ARCHITECT

Color scheme in black and white. Red vermilion suede cloth upholstery for chairs.

Cameragraph by Palmer Shannon

OIL RENDERING
BY CHESLEY BONESTELL
50-STORY BUILDING
AT 570 LEXINGTON AVE.,
NEW YORK CITY
CROSS AND CROSS,
ARCHITECTS

REPRODUCING ARCHITECTS' RENDERINGS

By PALMER SHANNON

Sketches and renderings have always been of great value to the architect in conveying his ideas to others. There is a constant need for perspectives and details of office buildings, banks, residences, schools and churches, particularly of buildings so situated that the camera has small chance to show them to advantage.

Duplicates—not mere photo-copies but reproductions that rival the originals in perfection—are of obvious value to the architect. In presenting a new project to a committee he is not limited to his original rendering but may have as many "originals" as he desires. Duplicates are also needed for purposes of record and publicity.

The draftsman, renderer or artist who makes the perspectives should keep in mind several considerations which will assist him in making the sketches more suitable for reproduction.

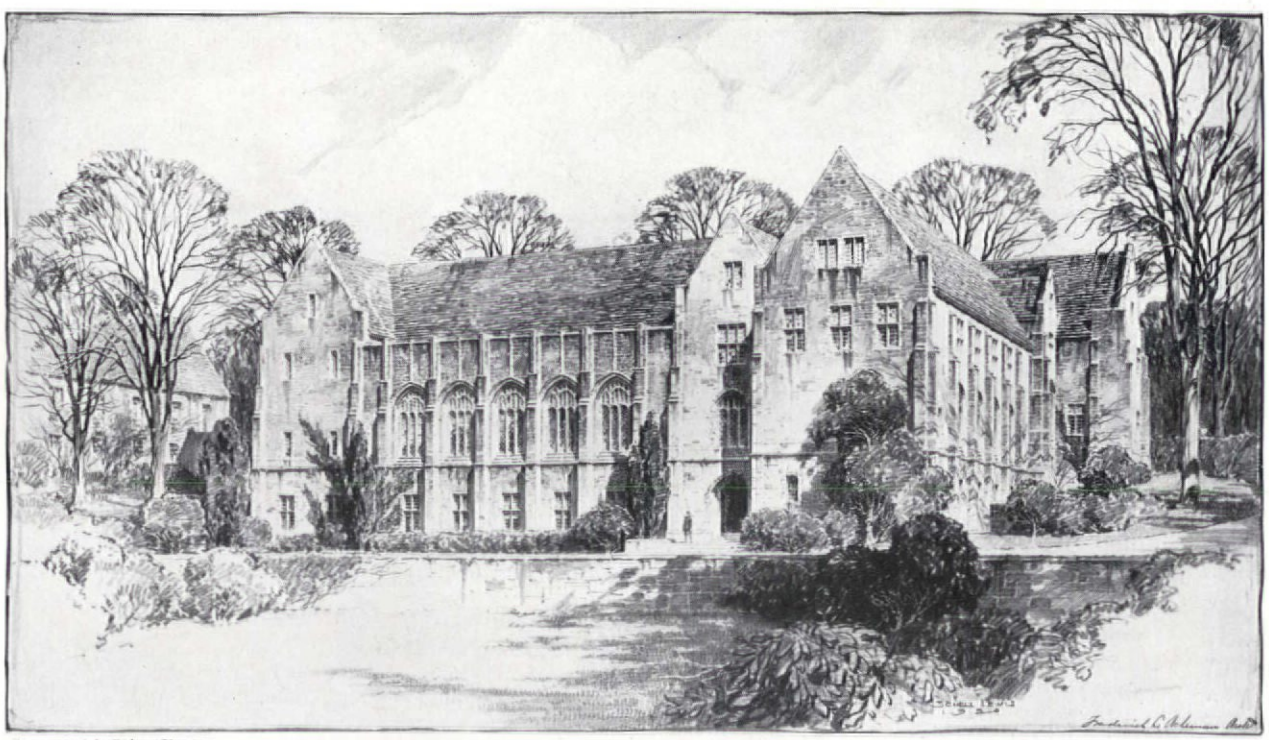
PAPER

Paper is the first thing to consider in making a black and white rendering which is to be reproduced. If tracing paper is used, it is desirable that the surface be white. There are many grades of so-called white tracing paper, but a dead-white tissue without any glaze is essential. If a very thin tracing paper is chosen with the intention of floating it when finished, the mount should be white and the best grade of transparent paste used. The tone of a reproduction of a tracing paper rendering will be a shade better if it is reproduced before the drawing is mounted. A good method of mounting is to use cement outside the margin of the drawing; in this way it can be reproduced as well after mounting as before.

If working on drawing paper or board, it is well to keep to dead-white surfaces. A fine combination for reproduction, however, is cameo paper and carbon pencil. Gray or colored papers are advantageous only when certain effects are desired, e. g., a white building on a dark background (pencil and chinese white on a gray or brown paper). Needless to say, the cleaner the drawing, the cleaner the reproduction.

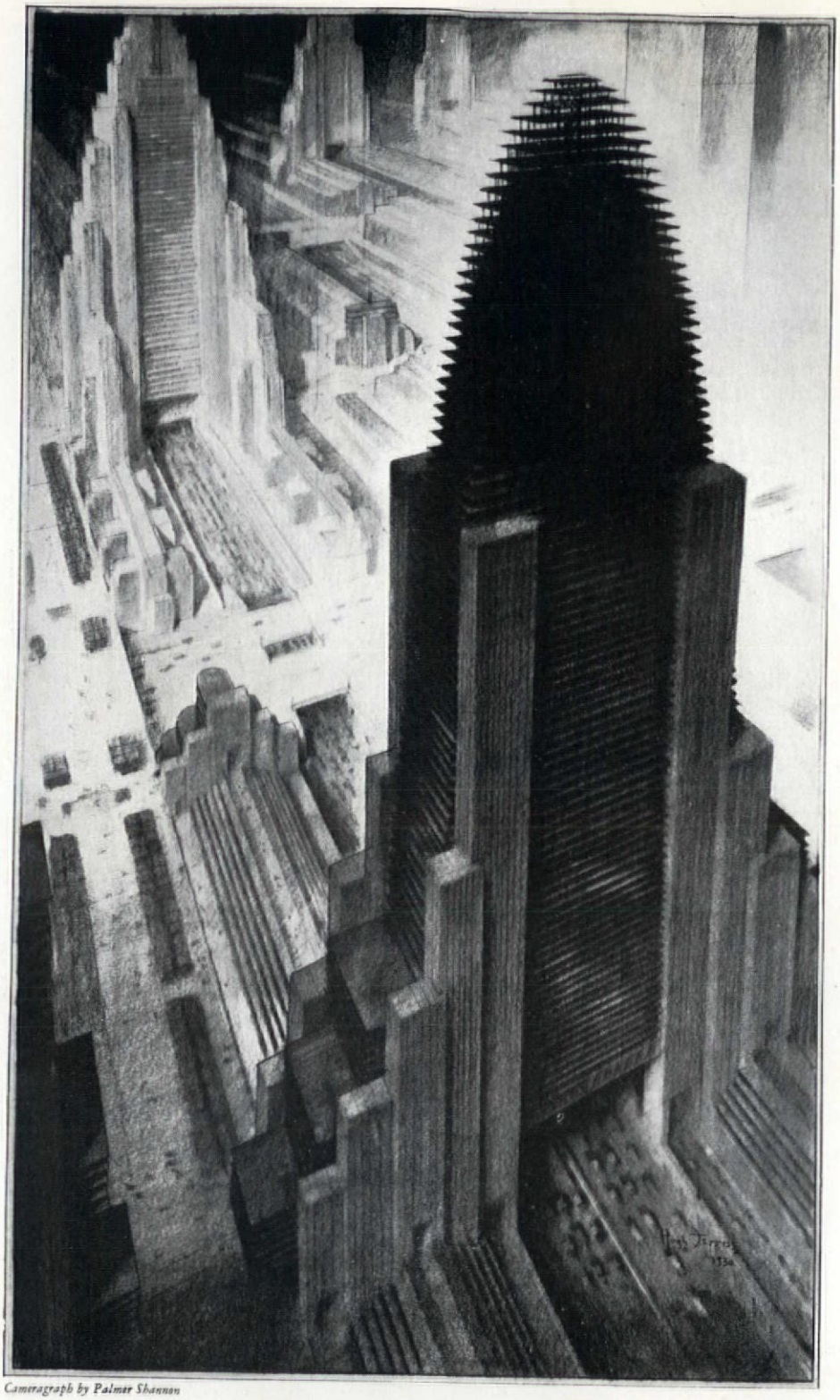
FIXATIF

It is very important that a fine quality fixatif be used correctly, that is, applied smoothly. This



Cameragraph by Palmer Shannon

GRAPHITE PENCIL SKETCH ON TRACING PAPER BY SCHELL LEWIS
FREDERICK L. ACKERMAN, ARCHITECT



Cameragraph by Palmer Shannon

CRAYON DRAWING AND DESIGN BY HUGH FERRISS

point should be accentuated, as many drawings have been made unfit for good reproduction by faulty or careless fixing.

MEDIUMS

When pencil is the delineating medium, the drawing should not be excessively light and delicate. In the use of graphite pencil, care should be taken to avoid making a surface that causes a sheen or reflection. For heavy dark effects, a carbon, litho or some similar pencil is best for reproduction.

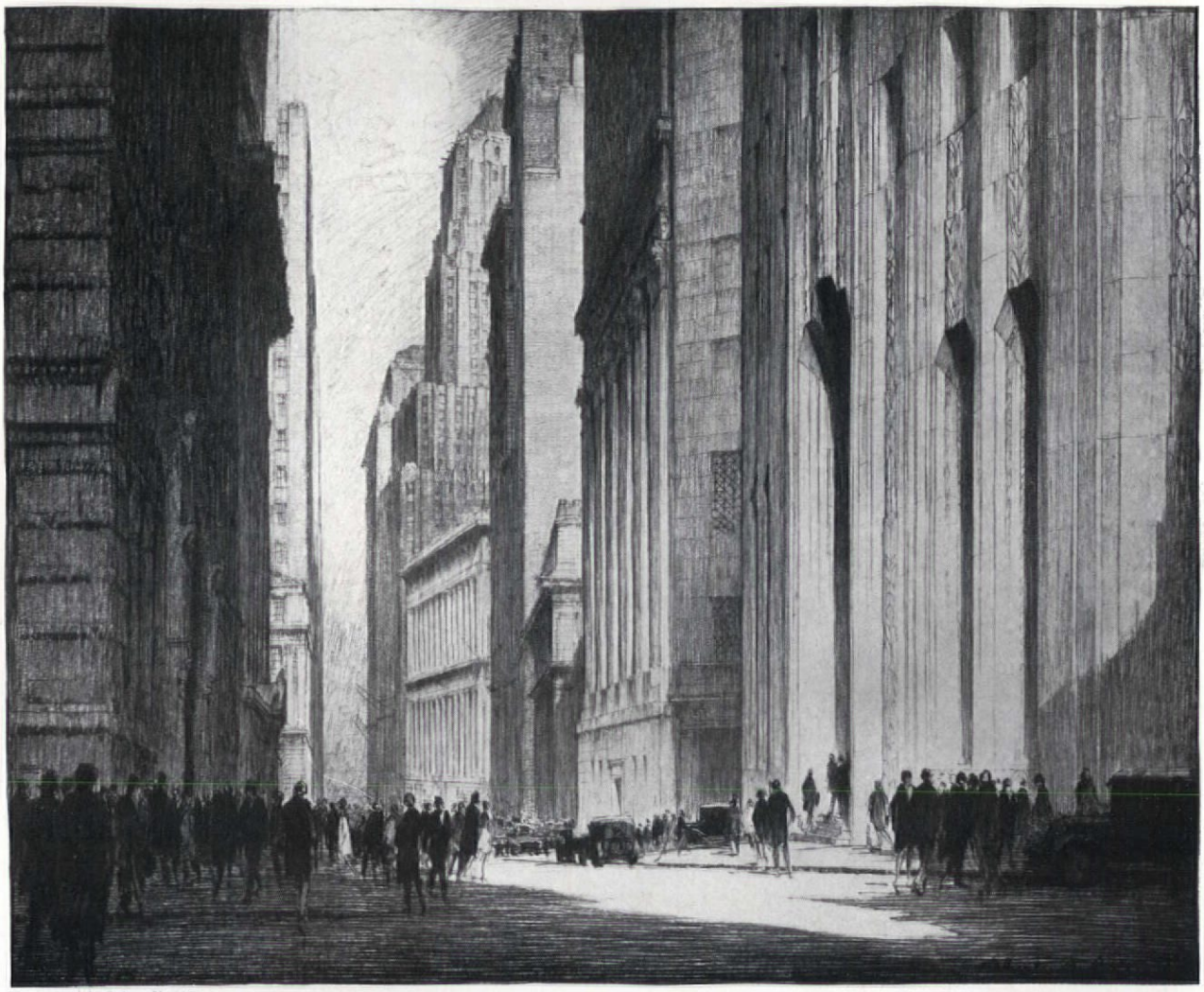
The strong line of pen-and-ink is relatively simple to reproduce.

Charcoal or black crayon may be used to the fullest range of tone values and will reproduce identically.

With water color, tempera, oil or other color media great care should be taken to get correct tone values. Color means nothing. A bright red placed beside a blue will not serve its purpose of contrast if the tone value of the red is the same as the tone value of the blue. Too little study is given to this subject by the beginner in color rendering. A *good* wash drawing is a fine example of tone value and will reproduce well, but too many color drawings are sadly lacking in this very necessary requirement.

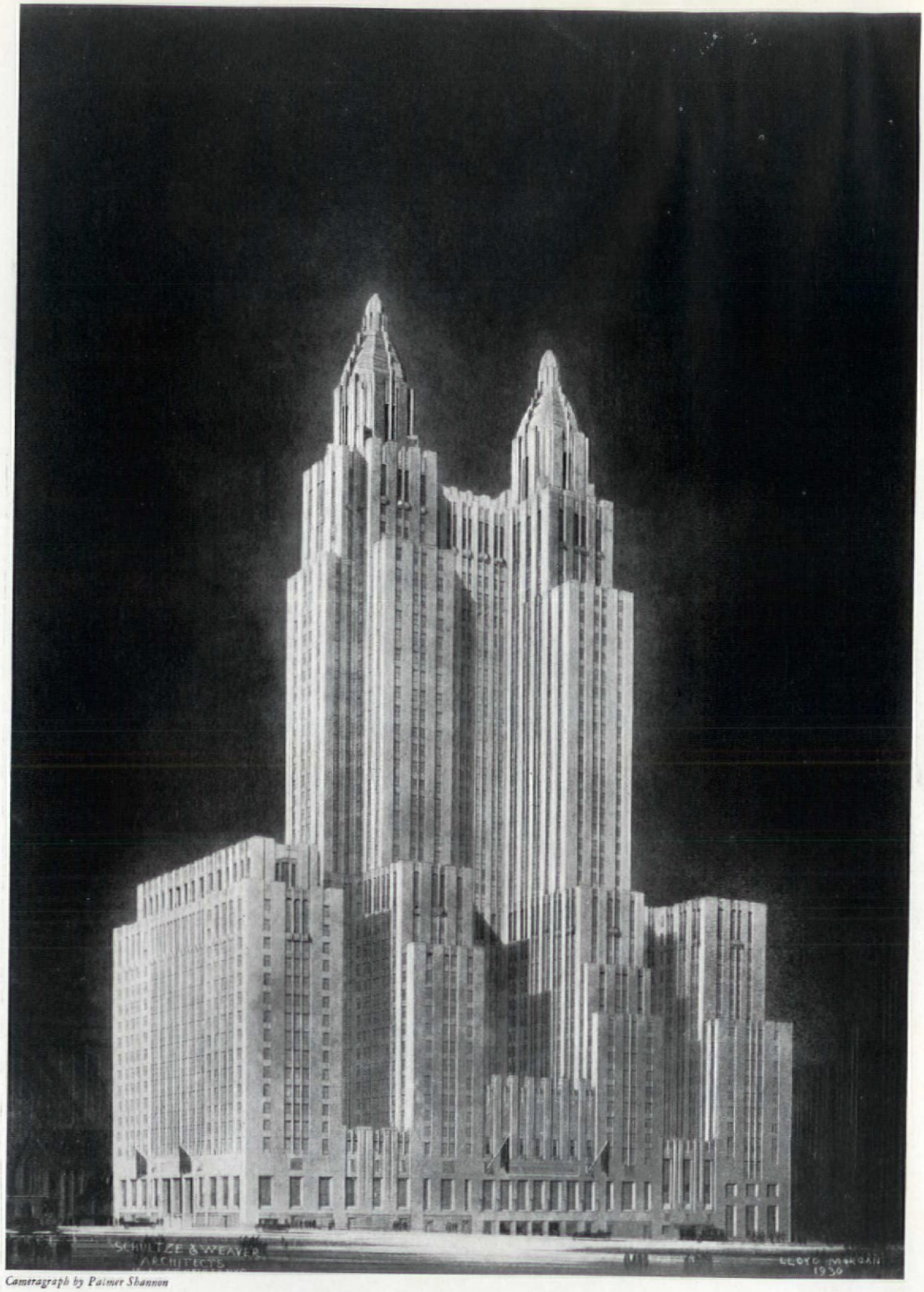
IDENTIFICATION

All renderings should be signed, monogrammed or initialed. For cataloging purposes, a title or at least a project number should accompany all drawings. If the title is to be included in the reproduction, it should be placed on the drawing, not on the mat. Both title and number are important as they serve to identify the work, thus preventing misclassification, which frequently leads to costly errors.



Cameragraph by Palmer Shannon

CARBON PENCIL SKETCH ON CAMEO PAPER BY CHESTER B. PRICE
DRAWING OF WALL STREET AND IRVING TRUST COMPANY BUILDING



Camera graph by Palmer Shannon

WASH DRAWING BY LLOYD MORGAN
HOTEL WALDORF-ASTORIA, NEW YORK
SCHULTZE AND WEAVER, ARCHITECTS

PORTFOLIO OF HOUSES

Gottscho

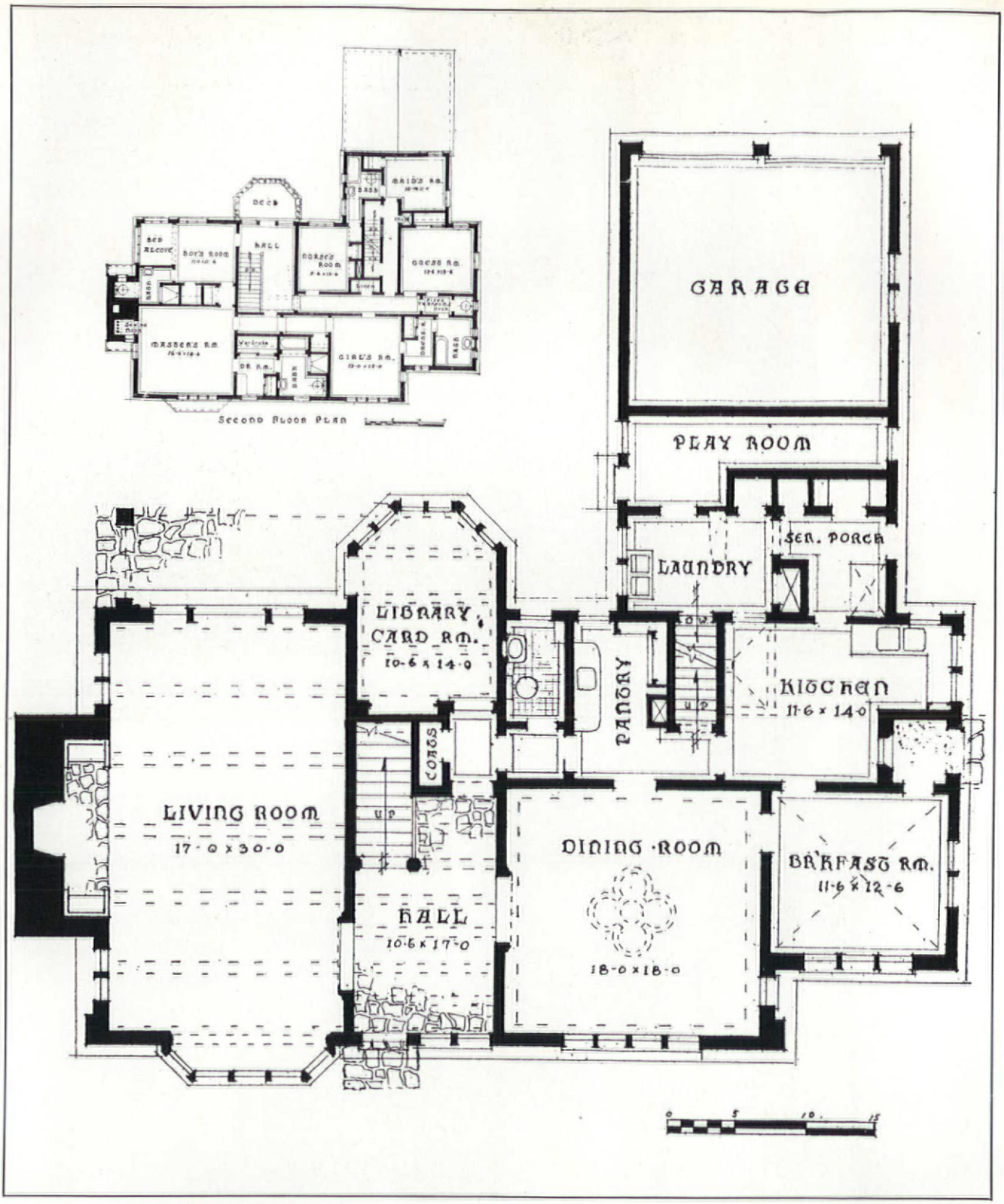
HOUSE OF FRANK C. ROOT
GREENWICH, CONNECTICUT
WILLIAM F. DOMINICK, ARCHITECT

Nyholm and Lincoln

HOUSE OF MR. AND MRS. PAUL M. BOWEN
GROSSE POINTE, MICHIGAN
HENRY F. STANTON, ARCHITECT

Berne

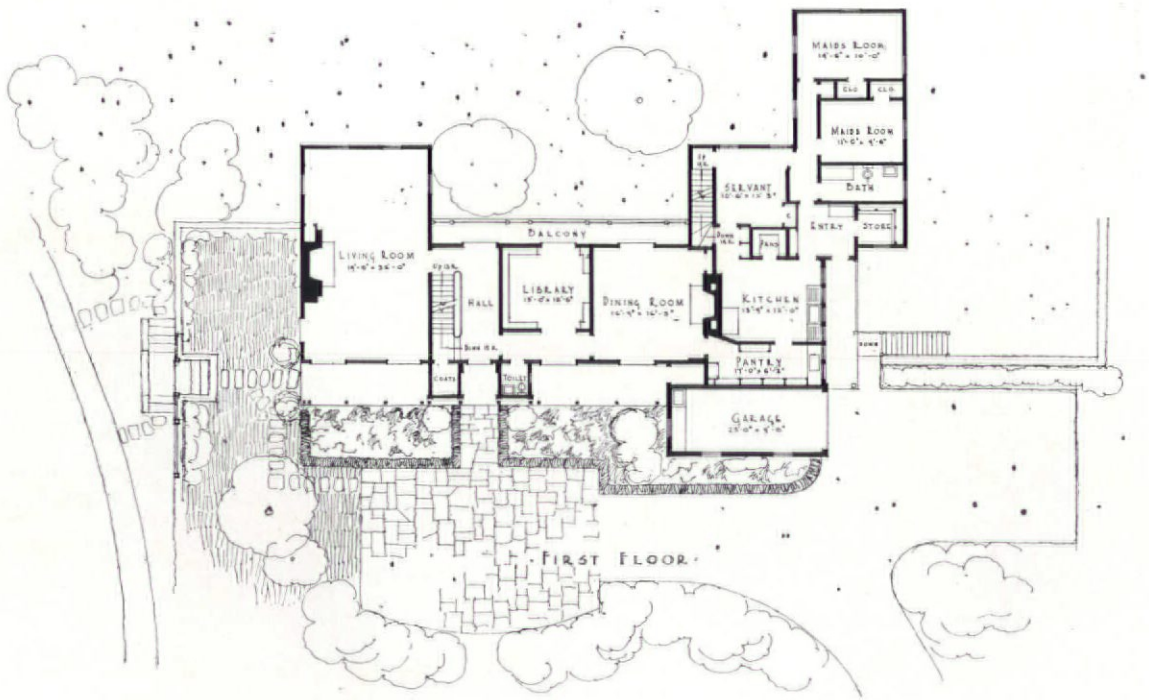
HOUSE OF CHESTER WURSTER
HOLLYWOOD, CALIFORNIA
NEWTON AND MURRAY, ARCHITECTS



HOUSE OF CHESTER WURSTER
HOLLYWOOD, CALIFORNIA
NEWTON AND MURRAY, ARCHITECTS

Van Anda

HOUSE OF GARDNER HAZEN
RYE, NEW YORK
CAMERON CLARK, ARCHITECT

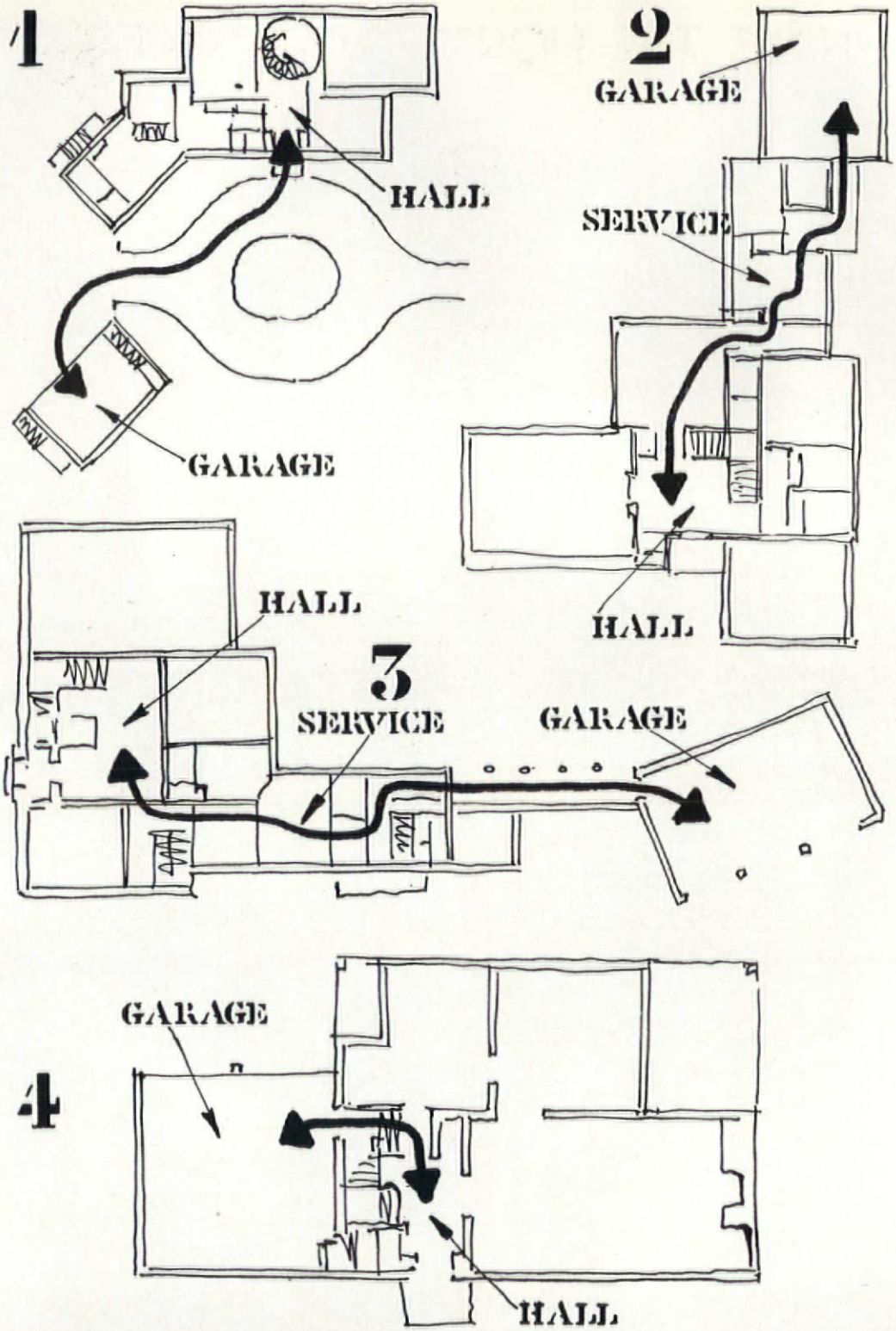


Van Anda

HOUSE OF GARDNER HAZEN
RYE, NEW YORK
CAMERON CLARK, ARCHITECT

Van Anda

HOUSE OF GARDNER HAZEN
RYE, NEW YORK
CAMERON CLARK, ARCHITECT



USUAL HOUSE PLANS SHOWING RELATION OF ENTRANCE HALL TO GARAGE

1. Garage separated from house. There is inconvenience in going outside to reach garage.
2. Garage incorporated in house plan. Undesirable passage from stairhall to garage through dining and service rooms.
3. Plan with same objections and additional separation by open-air cloister.
4. Most direct relation of hall and garage. This is a desirable arrangement since you can conveniently enter and leave house by motor car.

PLANNING THE HOUSE GARAGE

PURPOSE

The house garage should be considered as the entrance to the house.

It should be readily accessible from the stair hallway.

It should be reached as directly as possible from the street.

Storage space should be provided for one or more cars.

CUBIC AREA

The garage size is determined by automobile sizes and utilitarian uses to which the house garage is put.

*Dimensions of Motor Cars**

Length: 12′ 11¼″ (Ford A) to 18′ 8″ (Cadillac 353).
Width: 5′ 2″ (Essex D) to 6′ 0″ (Cord L29).
Height: 5′ 3″ (Ruxton) to 6′ 5″ (Lincoln).

Dimenions of House Garage

One-Car Garage

Inside Length: 17′ 0″ to 21′ 0″.
Inside Width: 9′ 0″ to 12′ 0″.
Inside Height: 7′ 4″ to 9′ 0″.

Two-Car Garage

Inside Length: 17′ 0″ to 21′ 0″.
Inside Width: 16′ 0″ to 18′ 0″.
Inside Height: 7′ 6″ to 9′ 0″.

Additional floor area may be required when provision is made for work space, coat room, storage and toilet facilities.

DOORS

Overhead and side sliding doors are preferred to doors that swing outward. The latter are objectionable because of their difficulty of operation when snow drifts against doorway and in windy locations. Overhead and side sliding doors require no space needed for car storage. The overhead type of door is necessary where curbs, as in illustration, are installed.

Door dimensions should be 8′ 0″ wide by 7′ 0″ in height.

*Full listing of Motor Car Dimensions for 1931 may be obtained from Automobile Chamber of Commerce, 366 Madison Avenue, N. Y. C.

CONSTRUCTION

Walls of garages should be built of concrete, hollow tile, brick or other approved incombustible material; or they should be built with 4-inch studs, filled solidly with brickwork laid in mortar or other incombustible material faced with metal lath and ¾″ cement plaster. Door from garage to house should be metal-covered on side toward garage, same to be of galvanized iron ranging from 18 to 26 gauge or 16 to 32 oz. copper, and same to be painted in color to contrast with wall.

Ceiling over garage shall be covered with metal lath and at least ¾″ coat of cement or gypsum plaster;* or by a ½″ layer of asbestos board covered with a ¼″ layer of plaster or with a layer of sheet metal.

Floors laid on the ground shall have a leveling fill of 6″ composed of crushed stone, cinders or gravel, well tamped and leveled to receive 4″ of concrete with a 1:2:4 mix (Portland cement, clean sharp sand and trap rock or gravel to pass a 1½-inch ring). Concrete floor to be finished with 1″ of cement mortar, consisting of one part cement and two parts sand, and troweled to an even, dense surface. The concrete base and surface to pitch to drain with 1 inch fall to every six feet.

MECHANICAL EQUIPMENT

Heating: hot water or steam with line run from house boiler. Radiation should be computed so as to provide 60° temperature with thermostatic control to operate drafts of furnace should the temperature drop below 35°. Both electric and coal burning heaters are available for the detached garage.

Ventilation: provide louvered metal ventilators on side of wall of garage, 2′ 0″ above floor level. Louvers of vent should be opened automatically when garage is entered.

OTHER ELEMENTS

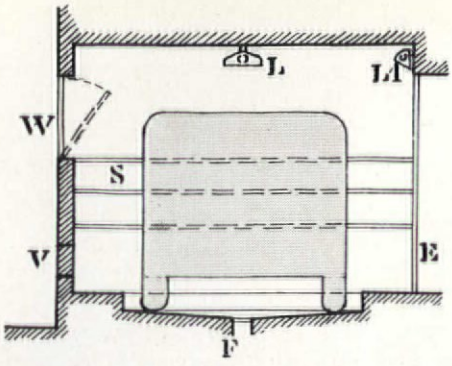
Drain: a heavy service cast iron drain with brass strainer of approved make should be installed in concrete floor connected to sewer system.

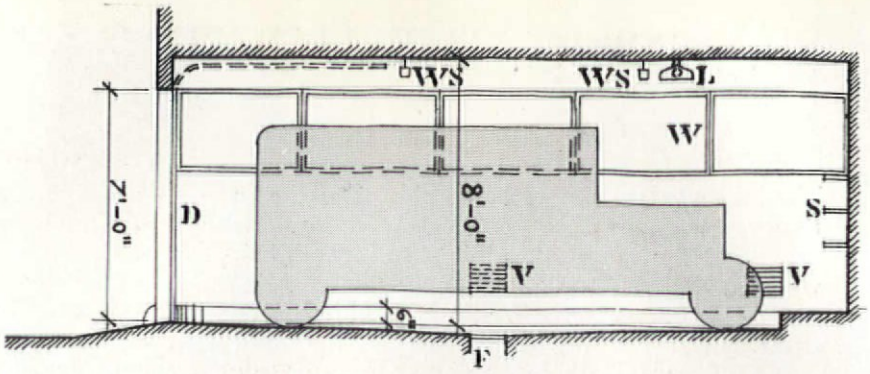
Water: spigot placed convenient to head of car fitted with sufficient length of linen hose.

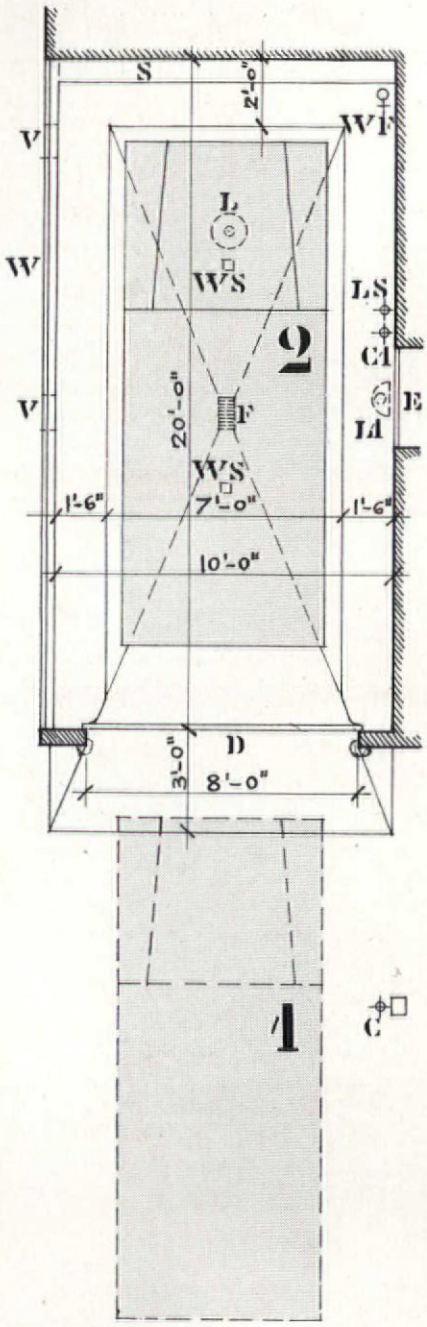
Shelves: for storage of tools, grease gun, oil and cleaning equipment.

Color: walls painted millwhite to reflect light. Face of curb at entrance in black and white diagonal stripes. Inside entrance door to house to be painted black or gray.

*Cement plaster is preferred, both as a fire-resistant and as protection against corrosion when metal lath is used.







TYPICAL GARAGE LAYOUT
(1 car)

Key to Indication on Plan and Sections

1 Car shown on plan before entering garage in position to operate control switch C.

2 Car inside garage.

C Control switch operated by driver to open, close and lock garage doors without leaving car.

C 1 Control switch for same purpose inside garage.

D Garage doors (overhead)

E Entrance door to house (metal clad).

F Floor drain at center of garage.

L Ceiling reflector over engine.

L 1 Light at house entrance, directed on running board.

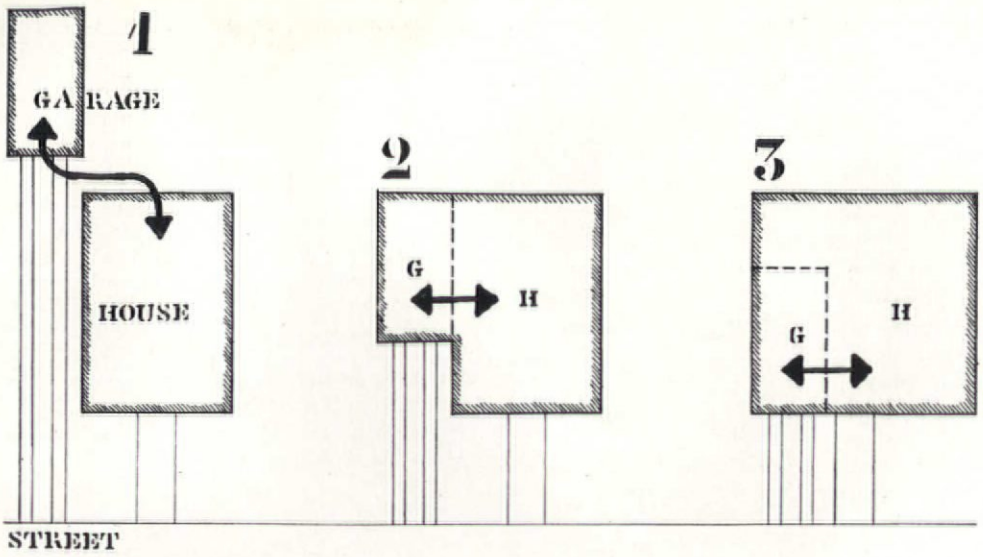
L s Light switches.

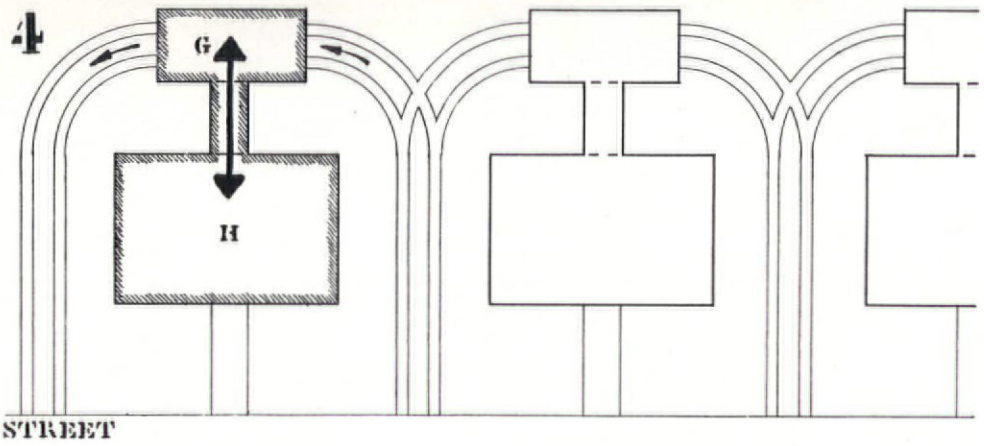
S Shelving for storage of supplies.

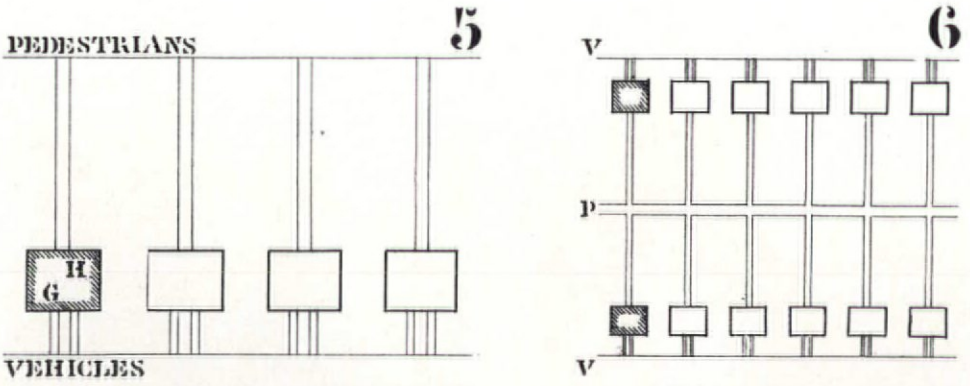
V Vents near base of wall.

W Windows hinged at bottom.

W s Sprinkler system for fire protection.







1. Detached garage, an arrangement suggested by the stable which was separated from house for sanitary reasons.
2. Same garage unit attached to house in order to attain convenience of entry. There is no valid reason as in case of stable to separate the two elements.
3. Final step in evolution. The garage is here incorporated in house plan and is most directly accessible from entrance hallway and from street.
4. An arrangement with garage at rear making available entire house frontage for living rooms. Cars may drive into and out of garage instead of backing out to street. One driveway serves two garages.
5, 6. A desirable separation of pedestrians and vehicles with grouped houses. Garage entrances face highways. Hall entries for pedestrians and the living rooms front gardens.

Washroom: adjacent to entrance of house from garage. Equipment: toilet seat, wash basin, mirror, paper towel rack, waste towel holder, soap container, closet for clothes storage, and hangers.

Apron to be of concrete (see construction of floors), same to extend 1 foot at each side beyond the door opening.

Lighting: ceiling light near end of garage over front end of motor car, equipped with dome type reflector so as to thoroughly illuminate engine (60-watt lamp). Wall light at entrance to garage from house for single car garage, with angle reflector to direct light on running board. Control of lights should be from house entrance hall and at main door entrance.

Power connection at wall over work bench or adjacent to entrance door from house (see plans).

Windows at side of garage afford better lighting of garage interior than glazed doors because daylight from side windows illuminates the length of car rather than the rear. Windows should be placed near to ceiling and should extend the entire garage length. They should be hinged at bottom to open in.

Overhead car washer to be installed on ceiling at place determined by location of cars; the washer to be equipped with an automatic cut-off so as to permit the regulation of the water supply. (Some models are made with an electric light attachment for the hose arm, and with special clamps, socket and reflector.)

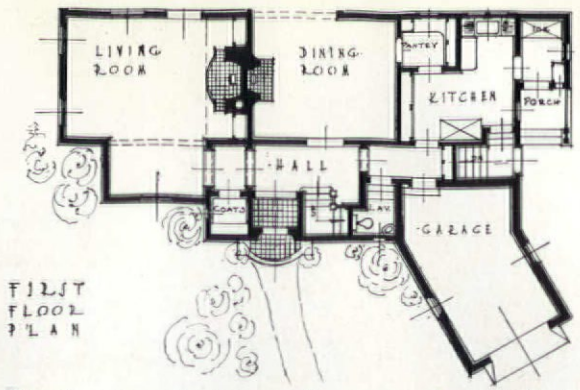
Door Opening Devices:

1. The General Power Door Unit, operated by electricity, opens, closes and locks the garage doors (General Power Door Company, St. Cloud, Minn.). It can be installed on almost any kind of garage door. The usual installation carries a three-station control system—a push button within the garage, one within the house and one at the key-lock switch outside the garage.

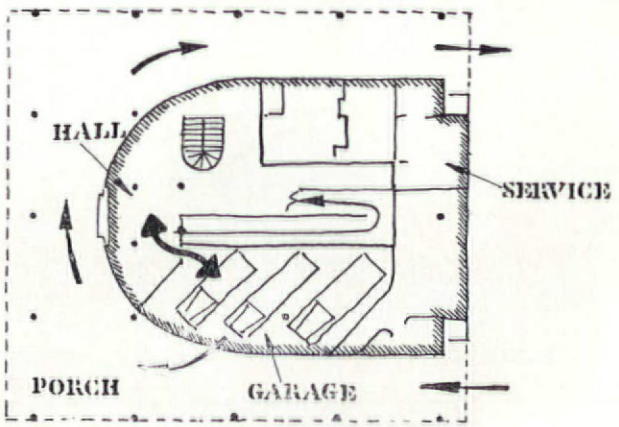
2. With radio control (Barber-Coleman Company, Rockford, Ill.), the driver of a car about to enter the garage can open doors and light the garage lights by simply pulling a knob on the instrument board. For full details see Architectural Record, December, 1930, p. 480.

Sprinklers: provide an approved automatic sprinkler system so constructed as to protect every square foot of floor area. Each sprinkler head to protect not in excess of 100 square feet area.

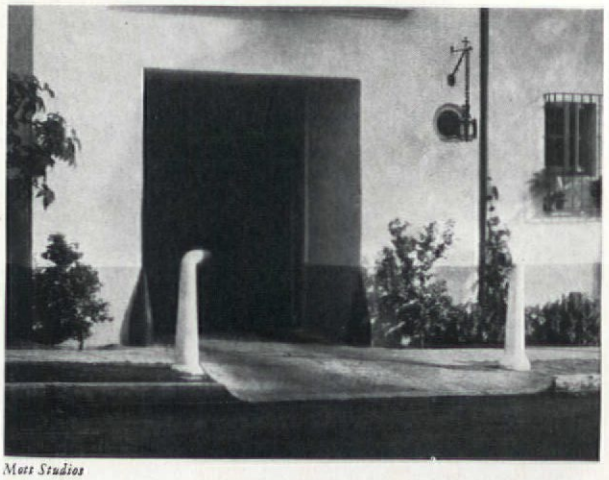
A. Lawrence Kocher
and Albert Frey



Direct communication with garage from hall. The lavatory and coat room are convenient for entrance from garage and at front door entrance to house.
MERTON E. GRANGER, ARCHITECT

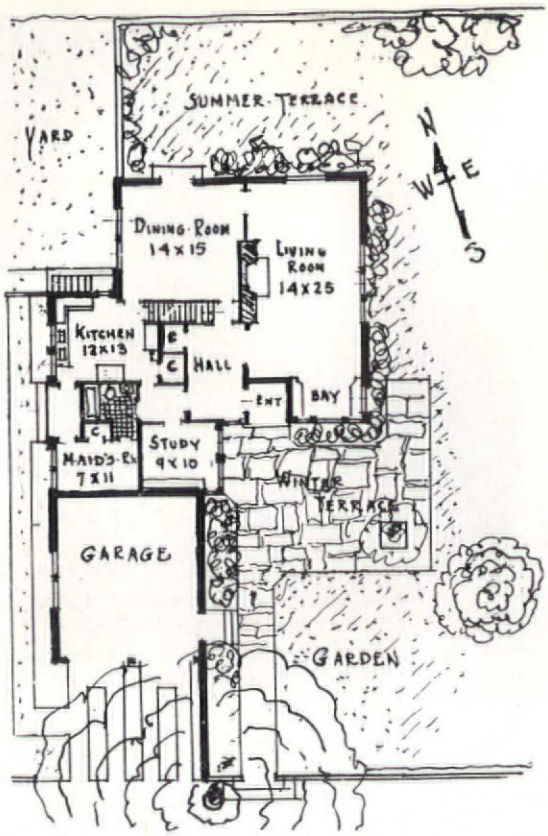


An arrangement of garage, hall and service on ground level. There is a continuous drive around these enclosed rooms. The upper floors with living rooms form a shelter over the drive and entrances.
LE CORBUSIER AND P. JEANNERET, ARCHITECTS



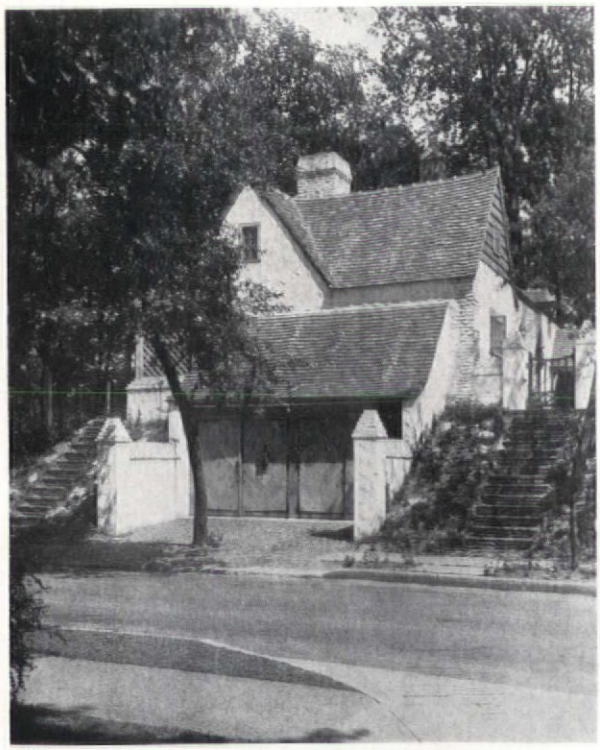
Mott Studios

Garage with door opening units (posts with key-lock switch) electrically opening, closing and locking garage doors without leaving car.
ARTHUR B. ZWEBELL, DESIGNER

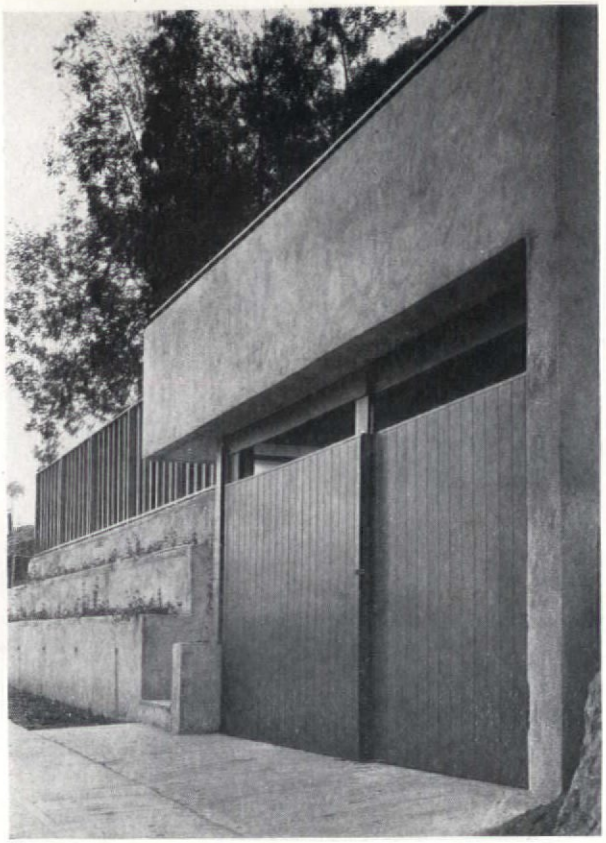


Garage entrance screened from front garden by wall. Entrance to house from garage is by unsheltered path.

R. C. WEINBERG, ARCHITECT



Gillies



Merga

Garage at driveway level below the first floor, a solution imposed by the steep slope of site. An exposed stairway parallels the garage to upper level.

STUDIO OF CONRAD BUFF, LOS ANGELES
RICHARD J. NEUTRA, ARCHITECT

Gillies

Garage attached to house at lower level.

HOUSE OF HARRY LOGAN, WARREN, PA.
FRANK J. FORSTER, ARCHITECT

Garage near street for house on small site with slope to rear. Stairways for service and to main house are at limits of property.

HOUSE OF EDWARD C. DUBEL, FOREST HILLS, L. I.
FRANK J. FORSTER, ARCHITECT

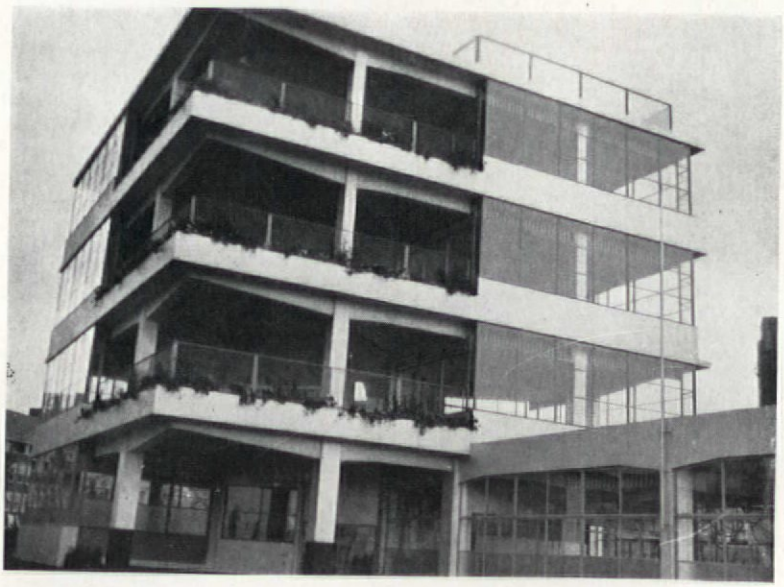
AN OPEN-AIR SCHOOL IN HOLLAND

Windows, which can be opened or closed according to the weather, form the three outside walls of each classroom in this new school in Amsterdam. Open roofed balconies are attached to the outer walls. The fourth and inner wall of each classroom faces a stairway, and has built-in shelves and washstand and movable blackboards.

Below the roof is a central heating system. A system of pipes warms floors and ceilings. There are no heating tubes exposed in the classrooms.

On the ground floor is a gymnasium, also enclosed by glass walls.

The school was built not for children suffering from sickness but for normal healthy children between the ages of six and twelve.



Photographs by
M. L. JORGENSON

LUXFER GLASS PRISM CONSTRUCTIONS*

Korn. Glas im Bau

BANK IN MAGDEBURG. WORM AND KRAYL, ARCHITECTS

THE GLASS UNITS

Pressed glass tiles in sizes from 10 to 17 cm. with prismatic, diamond or modeled surfaces designed for diffusion and controlled refraction of exterior light or for diffused reflection of interior light to avoid the usual black appearance of flat glass at night. The tiles are made of clear, reinforced or colored glass of high strength and great heat resistance.

* The German *Luxfer* glass constructions are based on designs by the American architect, F. L. Keppler, president of *Relief Glass Construction*, New York, and former owner and present American representative for *Deutsche Luxfer Prismen Gesellschaft*.

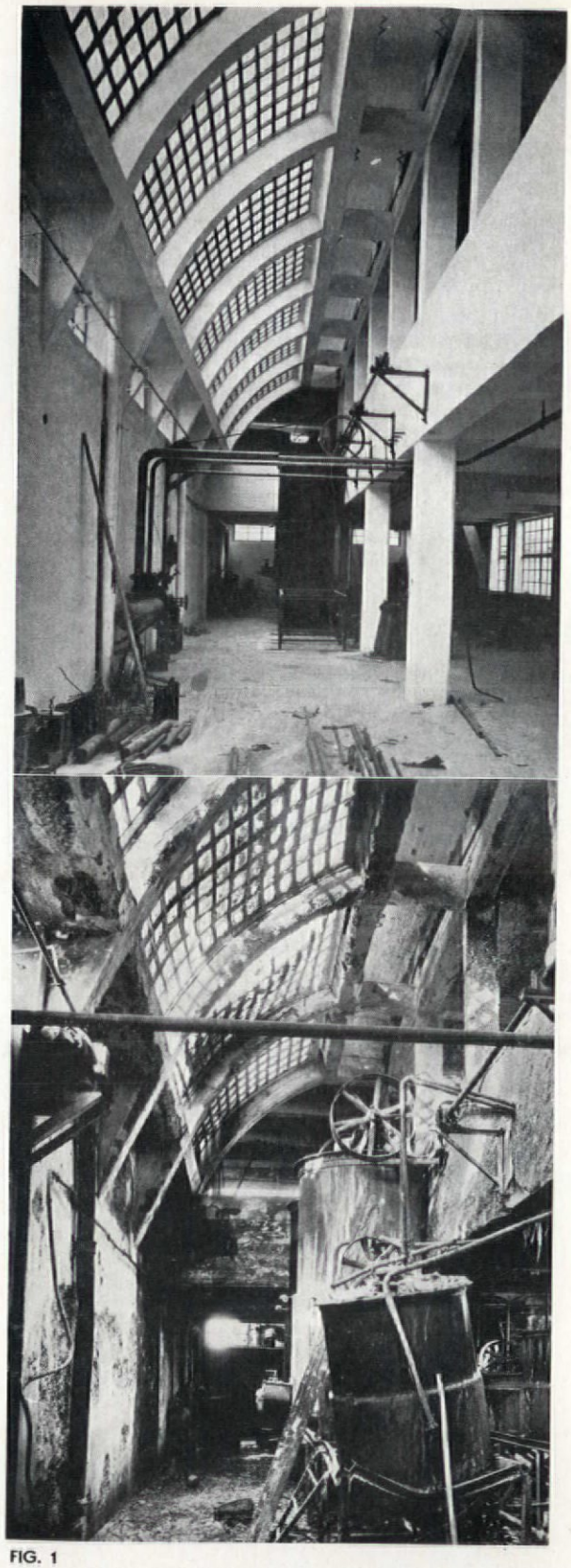


FIG. 1

CURVED LUXFER ROOF CONSTRUCTION FOR OIL REFINERY BEFORE AND AFTER A FIRE. THE TILES BROKE IN THE INTENSE HEAT FROM THE BURNING OIL BUT DID NOT FALL OUT OF THE FRAMES.

GLASS CONCRETE CONSTRUCTIONS

Glass units embedded in slender ribs of reinforced concrete. The glass is an integral part of the construction.

ROOF CONSTRUCTION

Figs. 1, 2, 3

Precast panels or field construction with metal forms. Broken or damaged glass units are exchanged easily without injuring the supporting framework. Condensation is greatly reduced. High bearing capacity. Used for roofs and interior floors. Special tiles for roof construction are provided with an edge groove in which bitumen plaster of about 5 mm. thickness is laid sealing the vertical joints between the glass and the concrete and haircracks in the concrete to prevent corrosion of the reinforcing.

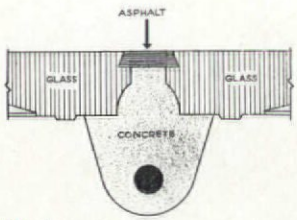


FIG. 2

LUXFER ROOF CONSTRUCTION SHOWING INSULATION OF JOINTS.

WALL CONSTRUCTION

Figs. 4, 5

Tiles consisting of two superimposed parts sealed together, forming a cavity for air. Broken units are easily exchanged without damaging the other part of the tile or of the adjoining units. The flanges of the tiles are designed to refract the light, which is stopped by the muntins in the usual window constructions. The single parts of the tiles can expand independently of each other, eliminating internal stresses when exposed to fire. The exterior smooth surfaces are cleaned easily. Low maintenance cost. Used for exterior and interior walls and partitions. Maximum size of panels 35 to 40 square feet. Precast in shop or built in field. Cost about $4 per square foot.

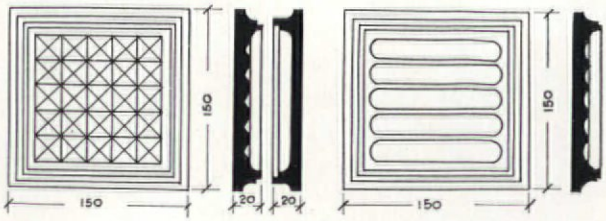


FIG. 4

TILES FOR LUXFER WALL CONSTRUCTION. DIMENSIONS IN MILLIMETERS.

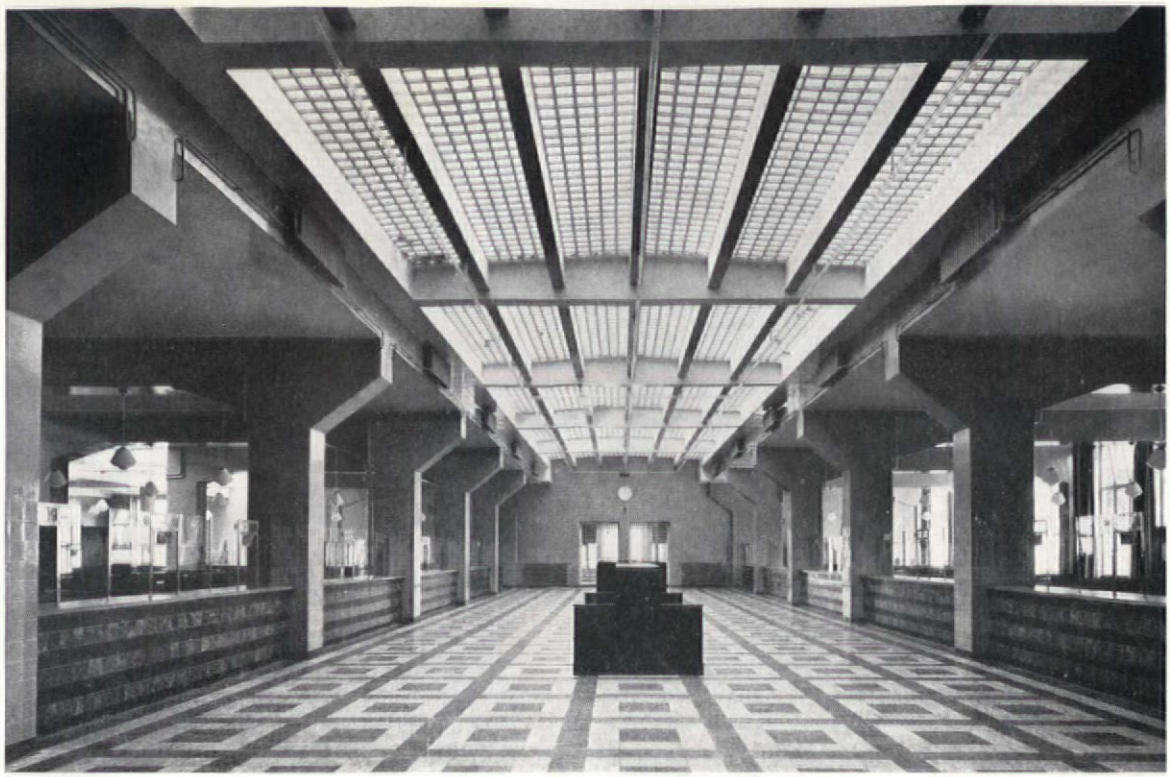


FIG. 3
LUXFER ROOF CONSTRUCTION FOR BANK IN MAGDEBURG. WORM AND KRAYL, ARCHITECTS

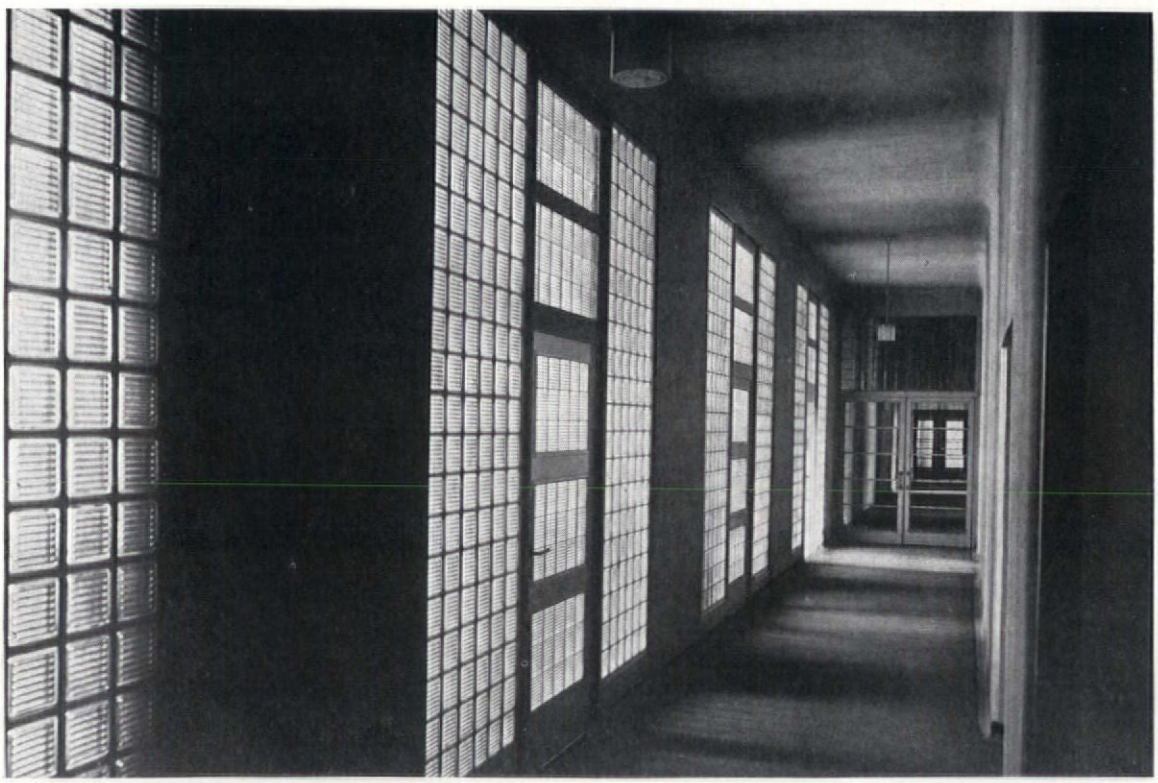


FIG. 5
LUXFER WALL CONSTRUCTION FOR HOSPITAL IN POTSDAM. MOHR, ARCHITECT

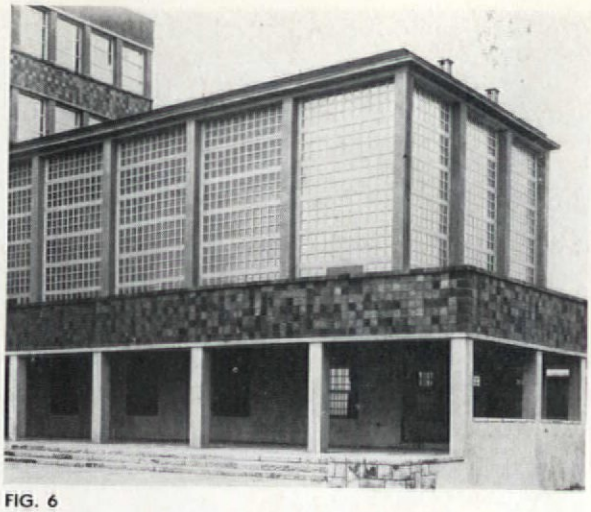


FIG. 6
LUXFER CONCRETE FRAME WINDOWS. RESEARCH LABORATORY, DORTMUND.

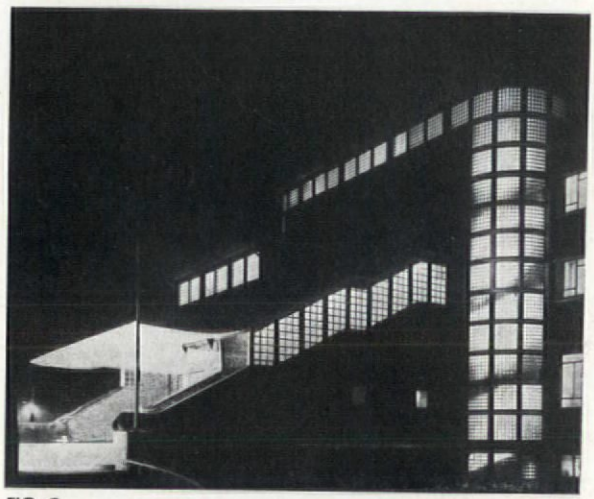


FIG. 7
LUXFER CONCRETE FRAME WINDOWS. AIRPORT IN HAMBURG. DYRSSEN AND AVERHOFF, ARCHITECTS.

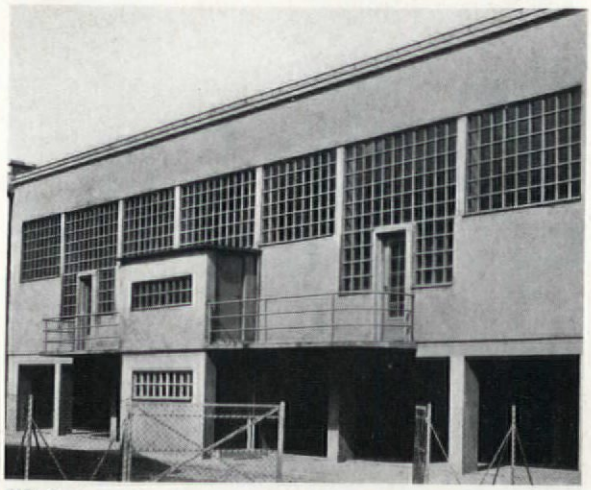


FIG. 8
LUXFER CONCRETE FRAME WINDOWS. TRANSFORMER STATION, PFALZ.

ELECTROLYTICALLY FRAMED TILES

The tiles can be fastened electrolytically in copper muntins. The glass units are placed in a network of copper strips in an electrolytical bath. By this process the tiles are sealed tightly by the metal. The overall width of the finished muntin is about ⅛ inch. The panels are made in sizes up to 16 square feet and are then fastened in metal frames with loose joints allowing for expansion in case of fire. This construction is used for walls, ceilings, roofs, store fronts and lighting fixtures. On account of its high fire-resistant property it has been used for fire curtains in department stores.

CONCRETE FRAME WINDOW UNITS

Figs. 6, 7, 8, 9

Machine-made concrete frames of standardized dimensions placed together and joined with cement mortar. Openings over 40 square feet are reinforced with rods embedded in the joints. The frames can be made for single or double glazing with ordinary sheet glass or for prismatic or diamond *Luxfer* glass tiles. Special putty is used for the glazing. Metal ventilators can be placed in the frames where desired. The construction requires no painting. The panels are fireproof and of low heat transmission compared with steel sash. The construction can be erected with unskilled labor. The maintenance cost is low.

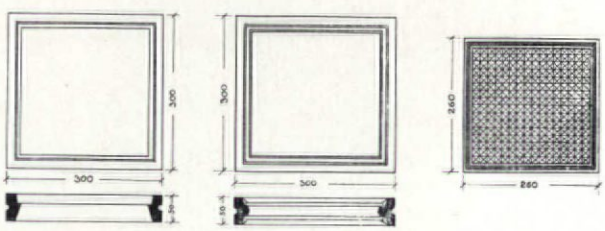


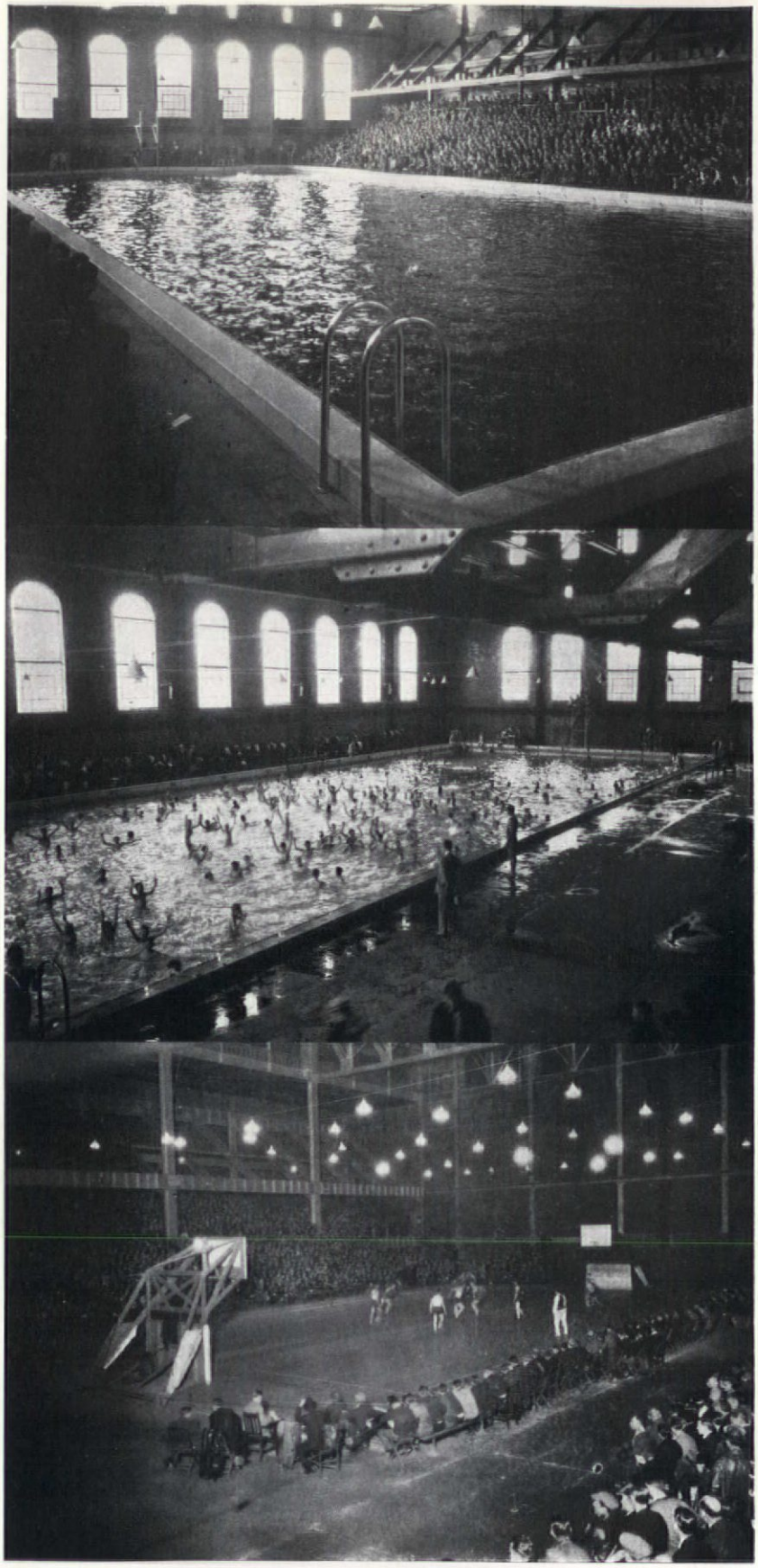
FIG. 9
LUXFER CONCRETE FRAME WINDOWS FOR SINGLE AND DOUBLE GLAZING AND FOR LUXFER TILES. DIMENSIONS IN MILLIMETER.

REFERENCES

Glas in der Architectur der Gegenwart, by K. W. Schulze, Wissenschaftlicher Verlag Dr. Zaugg & Co., Stuttgart, 1929.

Glas im Bau und als Gebrauchsgegenstand, by Arthur Korn, Ernst Pollak Verlag, Berlin-Charlottenburg.

Physical Properties of Glass, The Architectural Record, October, 1930.

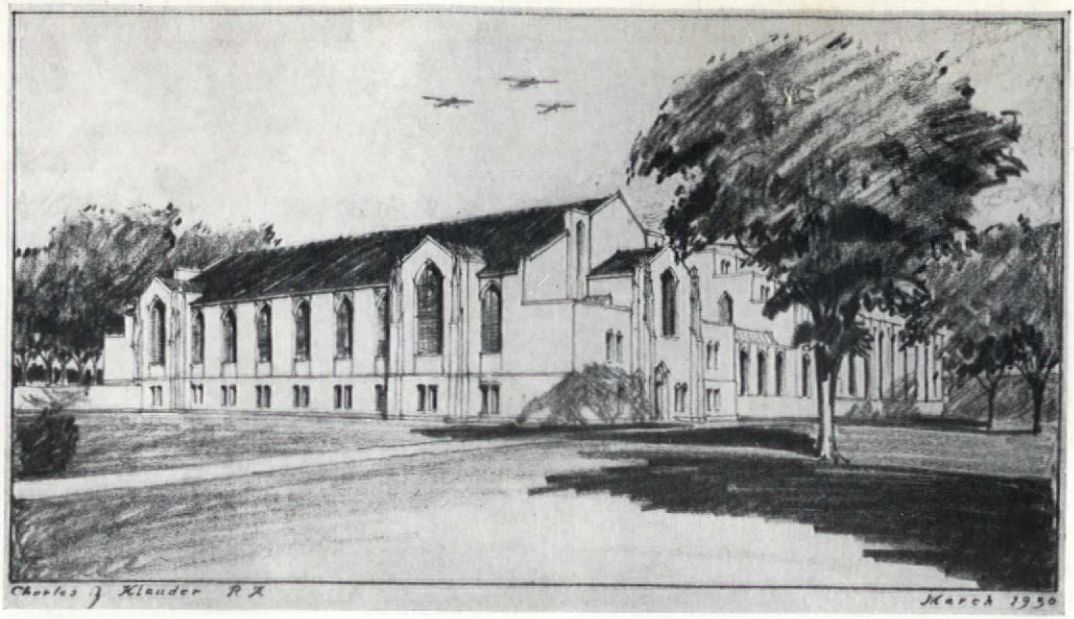


GYMNASIUM AND FIELD HOUSE
IOWA STATE UNIVERSITY
PROUDFOOT, RAWSON, SOUERS
AND THOMAS, ARCHITECTS

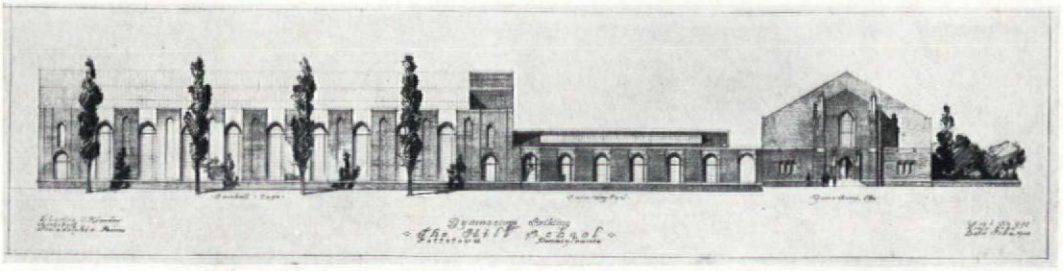
TECHNICAL NEWS
AND RESEARCH

GYMNASIUM PLANNING

By
ROBERT L. DAVISON

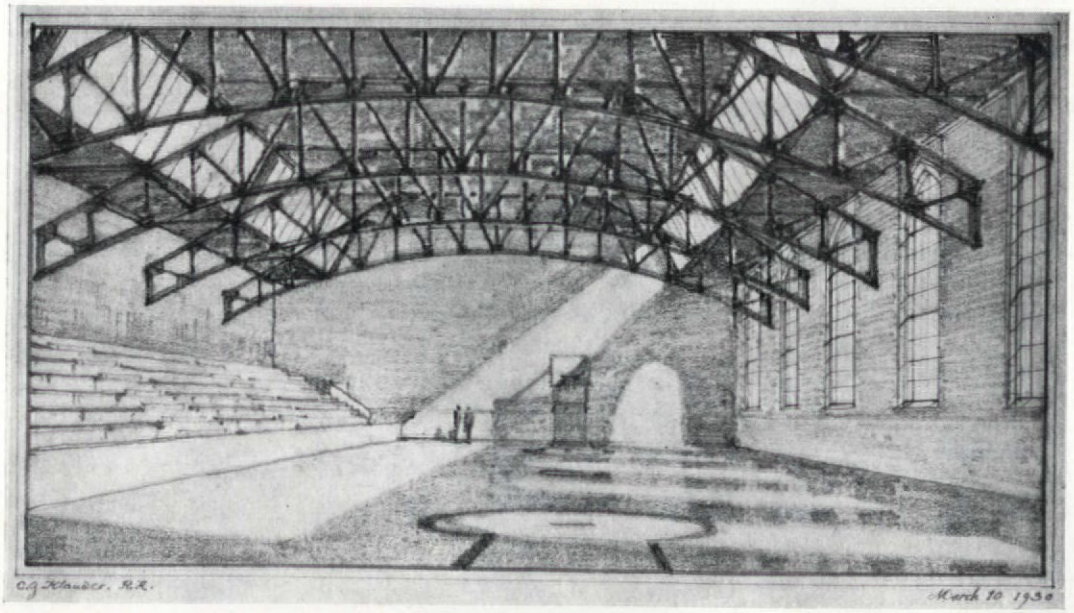


Exterior of gymnasium building.



BASEBALL CAGE SWIMMING POOL GAME ROOM

See plans on page 86.



Basketball room.

THE HILL SCHOOL
POTTSTOWN, PENNSYLVANIA
CHARLES Z. KLAUDER, ARCHITECT

GYMNASIUM PLANNING*

The design of a gymnasium involves first of all a clear definition of its functions, which in time must be translated into an equally definite statement of physical requirements.

A questionnaire in the form of a table should be prepared by the architect and submitted to the athletic or physical education department or building committee with the request that it be used as a checklist to aid them in expressing an opinion as to what facilities the structure should contain, physical requirements to be met, the number of persons who would use these different facilities, and so forth. The accompanying questionnaire, prepared by Frederick L. Ackerman as an aid in the preparation of the plan for the Cornell gymnasium, gives a good idea of what a questionnaire for a college gymnasium building should cover. The same method can be modified to meet other types of gymnasium buildings.

The facilities to be included must not only be such as to serve future needs, but must also, except in rare instances, be so chosen that a structure of minimum or mean volume will provide facilities for something like a maximum number. To illustrate: some indoor games and activities require about twenty-five times as much volume per man as others, so that the typical problem in its broad outlines is obviously that of providing, within a reasonable volume of structure, for such diversified activities as will engage the interest of the maximum number of students.

"In the selection of facilities we must be guided, to some extent, by local habits. But there are certain general considerations that obtain in any case. Some students will respond only to the prospect of participating in intramural or intercollegiate athletics; others will be interested only in games and casual play; still others will engage in physical exercise only under organized guidance and in calisthenics, and the like, so that diversity with respect to facilities is not merely diversity with respect to games; it is *diversity with respect to types of activities*—calisthenics, organized recreation, casual play." (1)**

*We wish to acknowledge the kind assistance of the following:
Mr. Frederick L. Ackerman, architect.
Dr. N. L. Engelhardt, Teachers' College, Columbia University.
Thomas, Martin and Kirkpatrick, architects.
Mr. Arthur Winters, Department of Physical Education, Hamilton College, New York.
Mr. R. L. Rayburn, Assistant Director of the Architectural Bureau of the Y. M. C. A.
Miss Lena Farrar, City Secretary of the National Board of the Y. W. C. A.

**See references on page 90.

DESIRABLE GYMNASIUM FACILITIES

The accompanying list of facilities, in order of rating, as prepared by the Committee on Construction and Material Equipment of the Society of Directors of Physical Education in Colleges, will also aid the architect in preparation of a questionnaire or checklist for submittal to his building committee.

GYMNASIUM CHECKING LIST

Listed in order of importance. (From report of Committee on Construction and Material Equipment, 1).

I. MAIN FLOOR
1. Basketball court
2. Physical education class floor
3. Bleacher space†
4. Visitors' gallery
5. Running track
6. Dance floor
7. Banquet facilities
8. Stage

The tendency among the above units is toward less consideration for use of the floor for dancing, banquets and stage facilities.

II. SWIMMING POOL
1. Pool proper
2. Heating unit
3. Filtration plant
4. Diving equipment
5. Bleacher space
6. Visitors' gallery

III. LOCKER ROOMS
1. Main (general)
2. Home team
3. Visiting team
4. Officials
5. Corrective, faculty

Contrary to the above table the tendency in the larger institutions is to rate the corrective locker room above the officials' locker room.

IV. SHOWERS
1. Main (general)
2. Team room
3. Staff
4. Faculty
5. Officials

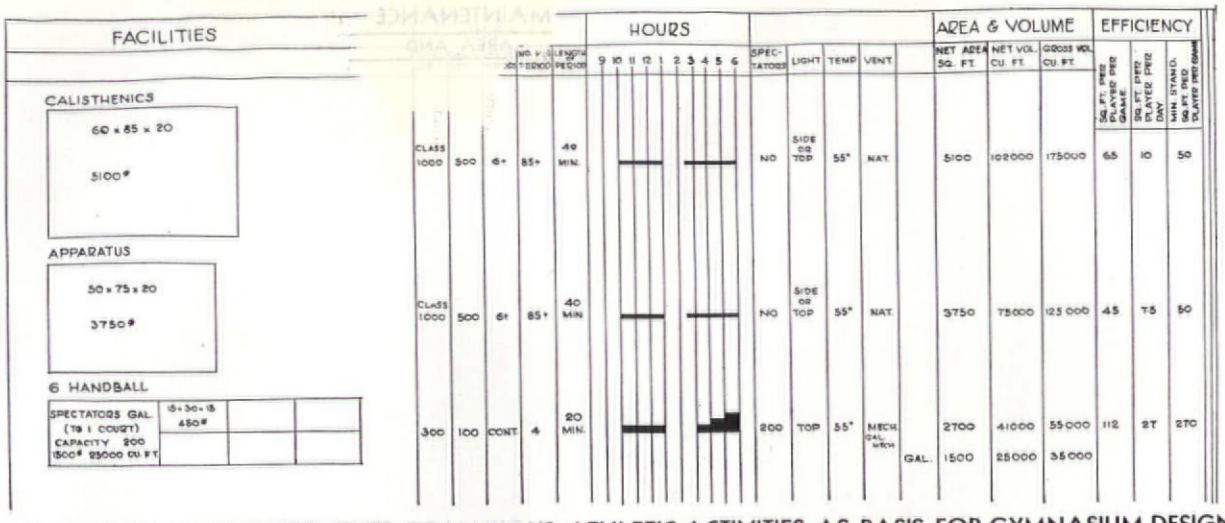
Of the auxiliary shower units those for the team room and staff are the most desirable.

†The recent survey conducted by Arthur R. Winters, Dept. of Physical Education of Hamilton College, shows that bleacher space is ranked ahead of physical education needs on gymnasium floor.

DIAGRAMMATIC PROGRAM SHOWING SIZE, USE, AND [illegible] OF GYMNASIUM FACILITIES *

FACILITIES	USE				HOURS						VOLUME			EFFICIENCY		
	Total Use	Daily Use	No. of Periods	No. per Period	Length of Period	A. M.	P. M.	Spectators	Light	Temperature	Ventilation		Net Area Sq. Ft.	Net Volume Cu. Ft.	Gross Volume Cu. Ft.	Sq. ft. per player per game	Sq. ft. per player per day	Min. Standard sq. ft. per player per game
Calisthenics 60x85x20 5100 sq. ft.	Class 1000	500	6+	85+	40 Min.	10-1	2:30-6	No	Side or Top	55°	Nat.		5100	102000	175000	60	10	50
Apparatus 50x75x20 3750 sq. ft.	Class 1000	500	6+	85+	40 Min.	10-1	2:30-6	No	Side or Top	55°	Nat.		3750	75000	125000	45	7.5	50
Rowing Machines 50x60x20 3000 sq. ft.	Class 500	400	Cont.	38			2-6	No	Side or Top	55°	Nat.		3000	60000	85000	80	7.5	80
Rowing Tank 50x60x20 3000 sq. ft.	Class 200	100	Cont.				2-6	No	Side or Top	55°	Nat.		3000	60000	100000		30	
Two Volley Ball Courts 30x50x20 1500 sq. ft.	Game 200	100	Cont.	20	45 Min.		4-6 3-6	No	Top				3000	60000	85000	75	30	75
Five Basketball Courts 45x75x22 3375 sq. ft.	Game 1000	500	Cont.	10	1 Hr.	10-1	5-6 4-6 2:30-6	500	Top	55°	Nat. and Mech.		16875	370000	530000	337	34	3000
One Basketball Spectator Gallery, 500 Cap. 3500 sq. ft. 70,000 cu. ft.												Gal.	3570	70000	100000			
Six Handball Courts 30x40x20 1200 sq. ft.	Game 300	100	Cont.	4	30 Min.	10-1	5-6 4-6 3-6	200	Top	55°	Nat. and Mech.		7200	144000	190000	300	72	300
Six Handball Courts 15x30x15 450 sq. ft.	300	100	Cont.	4	20 Min.	10-1	5-6 4-6 3-6	200	Top	55°	Mech.		2700	41000	55000	112	27	270
One Handball Court Spectator Gallery, 200 Capacity, 1500 sq. ft., 25000 cu. ft.												Gal.	1500	25000	35000			
Pole Vaulting, Jumping, etc. 3 strips 12x120x20 4300 sq. ft. 3 strips, 12x45x20, 1620 sq. ft.	200	100	Cont.	14		10-1	5-6 4-6 3-6	No	Side or Top	55°	Nat.		5940	119000	150000 (—)	400	59	400
Tennis, Indoor Soccer, Hockey 50x120x25 1620 sq. ft.	200	40	Cont.			10-1	5-6 4-6 3-6	500	Top	55°	Nat.		6000	150000	225000		150	Tennis 1800 Hockey 1000
One Tennis Spectator Gallery, 500 capacity 3500 sq. ft., 90000 cu. ft.												Gal.	3500	90000	110000			
Fencing 40x45x15, 1800 sq. ft.	100	50	Cont.	10		10-1	5-6 4-6 3-6	No	Side or Top	55°	Nat.		1800	27000	40000	180	36	200
Wrestling 40x60x20, 2400 sq. ft.	250	100	Cont.	12			4-6 3-6 2-6	No	Side or Top	55°	Nat.		2400	48000	60000 (—)	200	24	200
Boxing 40x50x15 2000 sq. ft.	250	100	Cont.	10			5-6 4-6 3-6 2-6	No	Side Side Top	55°	Nat.		2000	30000	45000	200	20	200
Swimming Pool 35x75 5500 sq. ft.	3000	300	Cont.			12-1	4-5 3-5 2-5	1500	Top and Side	72° to 75°	Mech.		5500	200000	300000		18	
Swimming Pool Spectator Gallery. Cap. 1500 10500 sq. ft. 260000 cu. ft.												Gal.	10500	260000	300000			
Swimming Pool 15x75 3000 sq. ft.	1000	200	Cont.				2-5	No	Side or Top	72° to 75°	Mech.		3000	90000	120000		15	
Corrective Gymnasium 30x40x20 1200 sq. ft.	300	150	Cont.	25					Side or Top	60° to 65°	Nat.		1200	24000	32000			
Indoor Golf 20x20x15 400 sq. ft.	100	25	Cont.	2					Side or Top	60° to 65°	Nat.		400	6000	8000			
Lecture Room 35x40x15 1400 sq. ft.	200								Side or Top	68°	Mech.		1400	21000	30000			
Medical Examination Room 60x260x15 15600 sq. ft.									Side and Top				15000	234000	300000			
Faculty Gymnasium 45x75x20 3375 sq. ft.									Side or Top	55°	Nat.		3375	68000	90000			
Three Thousand Lockers 160x100 16000 sq. ft.									Side or Top	65°	Mech.		16000	200000	275000			
200 Faculty Lockers 28x50 1400 sq. ft.									Side or Top	65°	Mech.		1400	17000	22000			
Sixty Showers 40x50 2000 sq. ft.										72° to 75°	Mech.		2000	35000	45000			
Ten-Lap Outdoor Track (8 to 10) Approx. 100x225. 10-12 ft. wide																		
Indoor Track 12 to 16 laps 6 to 9 ft. wide										68°					100000			
Toilets																		

* From Research Quarterly, 1930, The Society of Directors of Physical Education in Colleges.



TABULATION OF REQUIREMENTS OF VARIOUS ATHLETIC ACTIVITIES AS BASIS FOR GYMNASIUM DESIGN.
Prepared by Frederick L. Ackerman, architect, for Cornell University Gymnasium.
(See pages 68, 70 and 71 for plans and elevation.)

V. GENERAL
1. Office
2. Physical examination room
3. Lecture room
4. Ladies' room
5. Conference room
6. Reception room
7. Trophy room
8. Library

There is a distinct tendency to favor the first four units above the latter four.

VI. SEPARATE EXERCISE AND ACTIVITY UNITS
1. Handball courts
2. Corrective exercise room
3. Wrestling room
4. Small gymnasium
5. Boxing room
6. Baseball cage
7. Squash courts
8. Fencing room
9. Faculty gymnasium

Recommendations for the future show an appreciable gain in the desirability of squash, fencing, and small gymnasium facilities, and in that order. Indoor cage facilities were the only units to show a decrease in relative value.

VII. SUPPLEMENTARY ROOMS
1. Stock room
2. Trainer's room
3. Janitor's room
4. Bleacher storage
5. Drying room
6. Apparatus storage
7. Machine and repair room
8. Laundry

There is no indication of change in the order of desirability of these units.

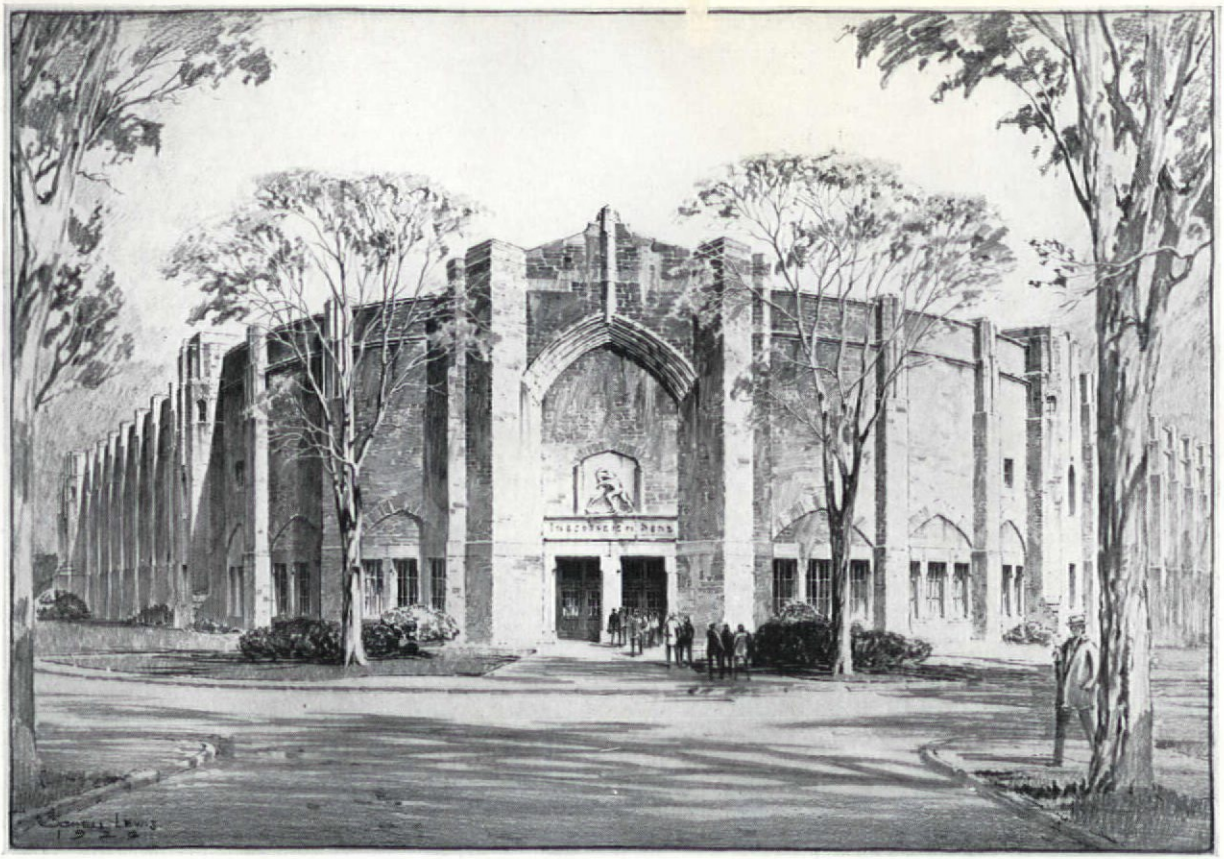
CHART SHOWING THE RELATIVE "ALL-ROUND" VALUE OF VARIOUS SPORTS. (11)

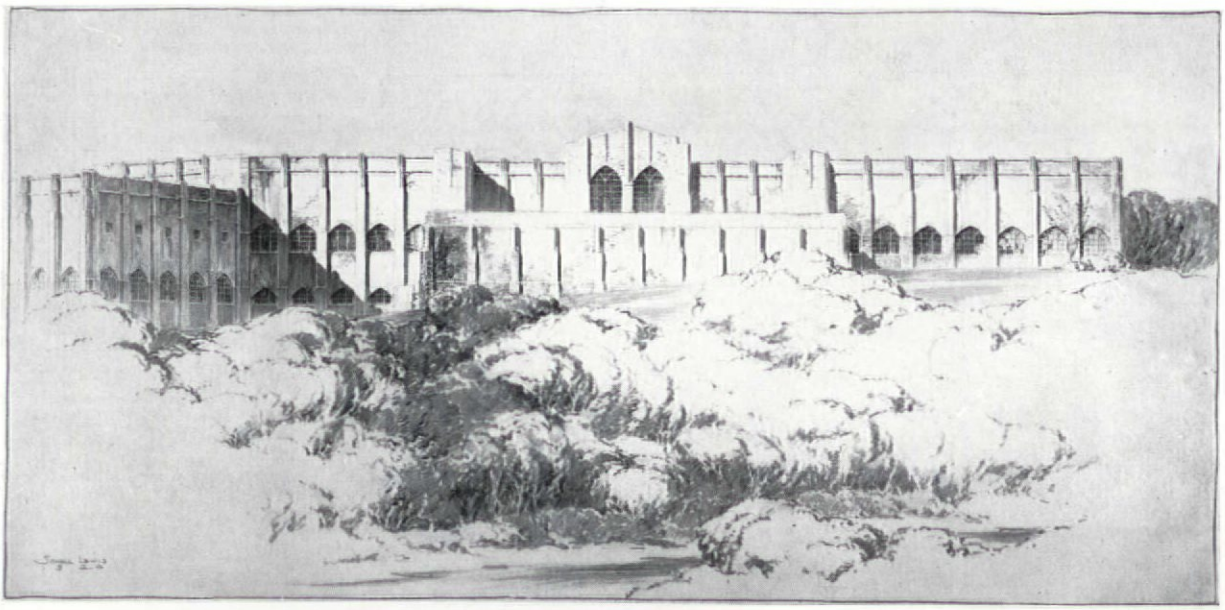
SPECIFIC REQUIREMENTS DETERMINED BY QUESTIONNAIRE

After having obtained a tabular statement of the wishes of the athletic authorities or building committee, the architect will find the design problems simplified if he will analyze such requirements as will condition definitely the arrangement of the plan.

Dual purpose limits gymnasium design

Where a gymnasium has to serve several functions, such as use for an assembly hall or stage, etc., these





PROPOSED GYMNASIUM
CORNELL UNIVERSITY, ITHACA, NEW YORK
FREDERICK L. ACKERMAN, ARCHITECT

See "Tabulation of Requirements of Various Athletic Activities," pages 66 and 67.

functions will outweigh frequently some of the requirements of the physical education program. When compromise is required, it will be advisable for the architect and building committee to weigh from the assembled data at an early period the relative importance of the various functions to be demanded of the combined gymnasium and to decide on the particular form of compromise to be adopted.

The gymnasium and auditorium may be combined in one of two ways:

(1) The stage floor may be made of ample width and depth so as to allow its use either as an ordinary stage or closed off from the auditorium and used as a gymnasium.

(2) The auditorium floor when cleared of collapsible chairs may be utilized as the gymnasium floor. In this case, a small stage is placed at one end or side of the auditorium.

Although a few years ago this dual use was accepted as the ultimate in gymnasium planning for schools, it is not generally advisable to plan for dual use because of the desirability of using both gymnasium and auditorium for a large part of the school day.

Natural light requirements limit height

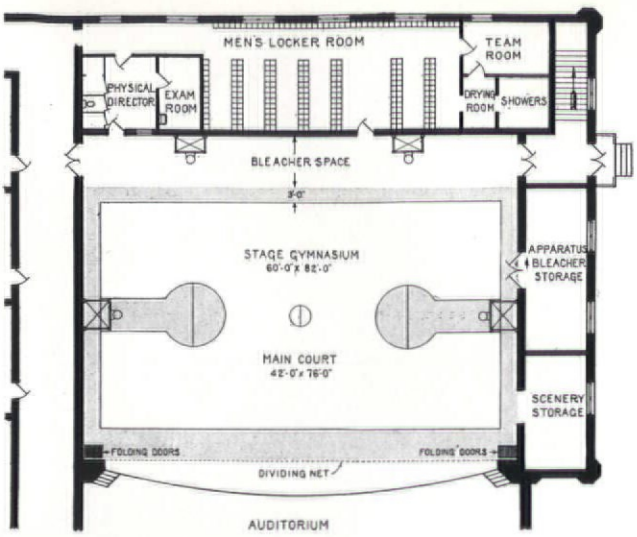
Referring to the table used by Mr. Ackerman in designing the Cornell gymnasium, one sees that certain activities and certain rooms require varying amounts of top lighting, whereas other rooms are served equally well with light from top or sides and in a few cases from the end of the room. This factor not only establishes the location or design of individual rooms, but since the table shows that fully half the rooms should have top light, it eliminates a three-story building (in this case) as a desirable solution unless land costs are a primary factor.

For the basketball court and general-purpose gymnasium room "natural lighting is preferred on the two long sides of the room with a minimum of light at ends. Special care should be taken to protect basketball players against end lighting. Overhead lighting in the gymnasium is the least desirable method of natural lighting." (5)

Natural ventilation requirements limit form

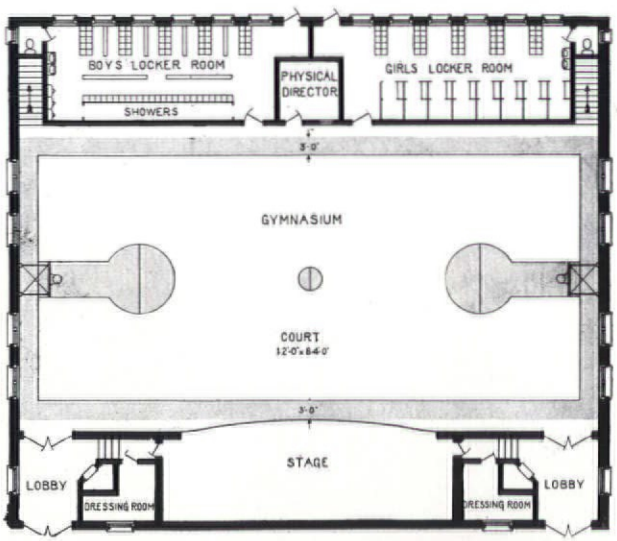
The adequate natural ventilation of rooms of the shape, area and volume given in Mr. Ackerman's table requires the provision of windows in the two side walls.

To permit adequate ventilation "except in the case of rooms that are to be provided with mechanical ventilation, the rooms should be ranged in wings with low corridors along the side so as to allow windows above. Second-floor rooms should be approached by stairs so placed, with reference to a pair of rooms, that second-floor corridors may be reduced to a minimum." (1)



The stage floor is made of ample width and depth to allow its use either as an ordinary stage or as a gymnasium when closed off from the auditorium by folding doors.

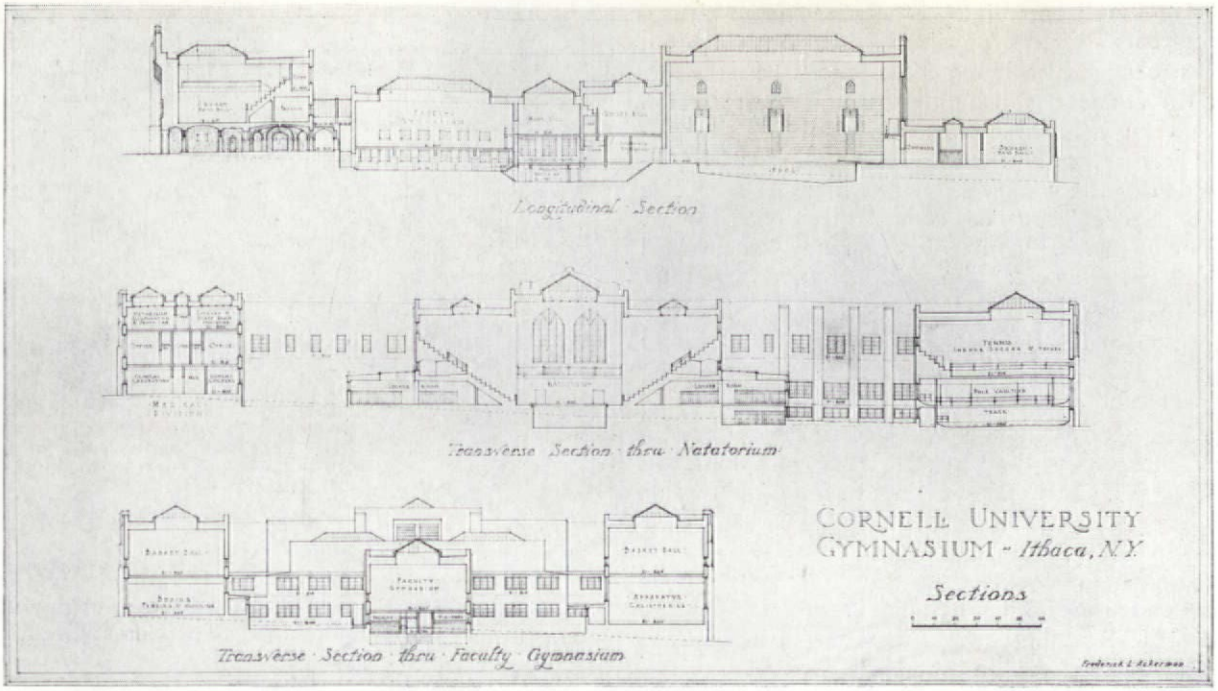
This is no longer considered good practice because of the desirability of the independent use of both gymnasium and auditorium for the larger part of the day.



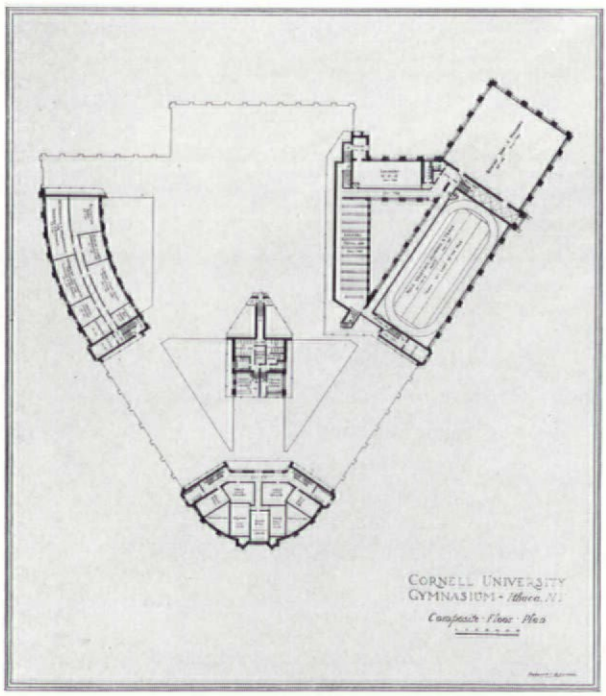
By the use of chairs the gymnasium can be readily converted into an auditorium.

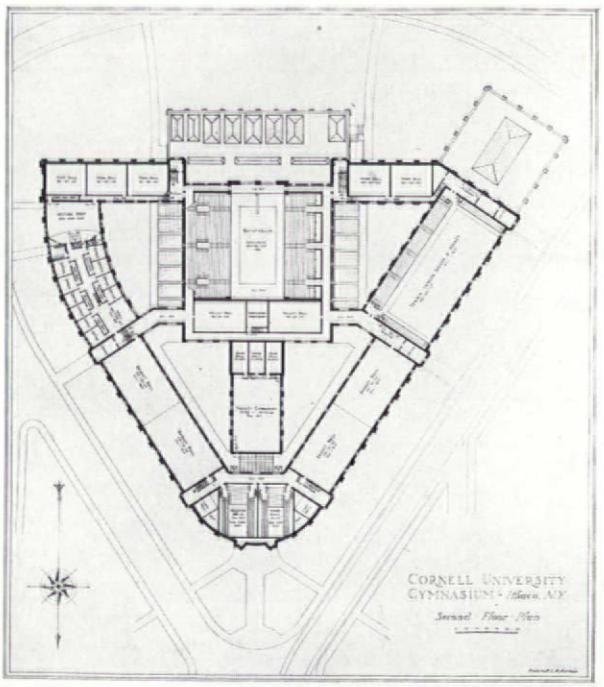
This double use is never very satisfactory but may be employed when funds are limited.

Plans from "Medart Gymnasium Equipment."



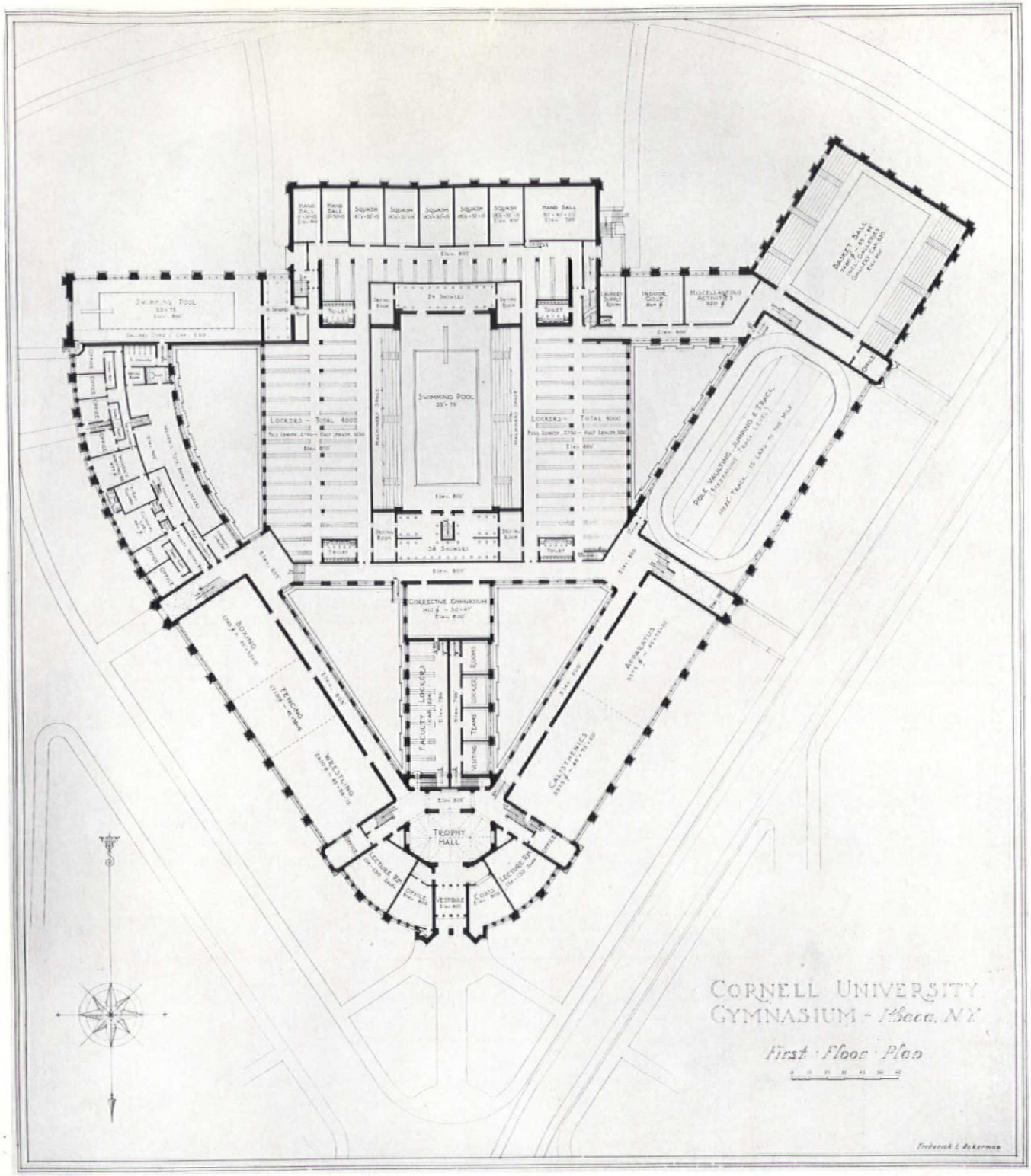
The low first-floor corridor windows permit cross ventilation of the gymnasium rooms.





PROPOSED GYMNASIUM
CORNELL UNIVERSITY, ITHACA, NEW YORK
FREDERICK L. ACKERMAN, ARCHITECT

The placing of stairs between pairs of rooms eliminates need of second-floor corridors, thus permitting cross ventilation of gymnasium rooms.

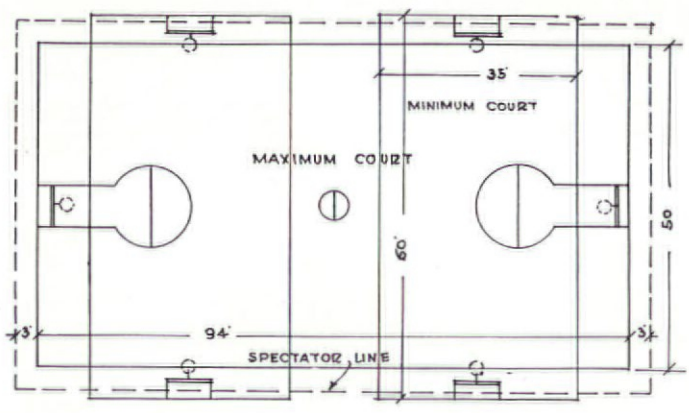


PROPOSED GYMNASIUM
CORNELL UNIVERSITY, ITHACA, NEW YORK
FREDERICK L. ACKERMAN, ARCHITECT

Gymnasium planned to meet requirements set forth in "Tabulation of Requirements of Various Athletic Activities," shown on pages 66 and 67.

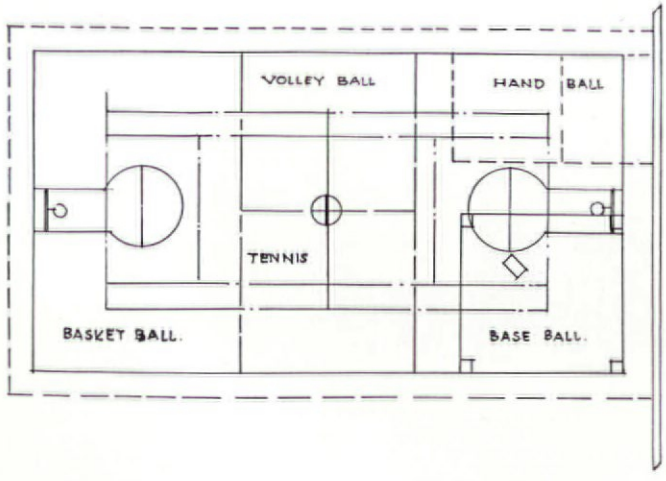
Hyskell

BOYS' GYMNASIUM
EAST HIGH SCHOOL, DENVER



SPACE REQUIREMENTS OF BASKETBALL GAMES DETERMINE SIZE OF MAIN GYMNASIUM FLOOR.

Maximum and minimum basketball court sizes. The large court may be used for exhibition games and the two smaller courts for minor or practice games.



Basketball court for exhibition games is large enough for other sports.

Basketball court determines size of main gymnasium floor

In determining the requisite size and shape of a gymnasium floor the requirements of basketball are practically always the determining factor. There are several reasons for this. In the first place, most of the other sports using the main floor will readily fit into any size and shape of space that is found suitable for basketball, whereas the reverse is not always true. In addition, basketball is not only the most important indoor sport, but physical directors agree that from the standpoint of contributing to the all-round development of the student, basketball is the best of all the indoor gymnasium sports.

Other facilities

The selection of other facilities to be incorporated in a gymnasium building for diversified activities will be largely a problem to be decided by the building committee. But the efficiency ratings of the various facilities given in the tabular questionnaire (see pages 66 and 67), together with the accompanying chart showing the value of the various activities, should assist the architect in advising what facilities should be included or omitted in any particular building.

Area cut-outs aid planning

Having determined the areas of the facilities to be provided (see pages 66 and 67), the architect may find assistance in the development of a logical scheme if cardboard cut-outs to scale are prepared for the various rooms. These cut-outs can be colored or otherwise treated to indicate requirements for height, lighting and ventilation.

REQUIREMENTS FOR BASKETBALL COURTS

OFFICIAL COURT SIZES

"The playing court shall be a rectangular surface free from obstructions and shall have maximum dimensions of 94 feet in length by 50 feet in width and minimum dimensions of 60 feet in length by 35 feet in width.

NOTE: By mutual agreement of the captains, Section 1 and the distance of the boundaries from obstructions named in Section 2, may be changed.

The following dimensions are considered ideal for teams whose players are of the age indicated for each group:

1. Elementary school age..... 40 by 60 feet.
2. High school age..... 48 by 75 feet.
3. College age..... 48 by 84 feet.

"These are the dimensions for the playing court only. . . . There shall be at every point at least 3 feet from any obstruction to the playing court . . . In planning the gymnasium, at least 10* additional feet should be provided on each side and each end." (7). In addition there should be allowance for portable bleachers or balconies.

*The Architectural Bureau of the Y. M. C. A. feels that while 10 feet or more may be desirable for school or college gymnasiums this space is not essential in their gymnasiums in most instances where spectator space is a secondary consideration.

EXHIBITION AND PRACTICE COURTS

"The ideal floor is one so proportioned that two or possibly three official basketball courts can be laid across the width of the gymnasium. These courts should have a minimum 6-foot spacing between adjacent side lines and a 3-foot minimum clearance between the side lines and the end walls. The exhibition court is then laid longitudinally with the gymnasium." (2)

Except for exhibition games the gymnasium floor is divided by folding partitions or a dividing net stretched between courts to keep play on one court from interfering with play on another court. Of some 20 institutions dividing their floors, it was found that 16 use nets, 2 use doors, and 2 use canvas curtains. The recommendations likewise favor the net but 12 prefer not to use any method of division. (1)

NUMBER OF BASKETBALL COURTS

A recent survey shows the desire on the part of athletic directors to double the number of basketball courts now available. (1)

SIZE OF BASKET BALL COURTS IN EXISTING GYMNASIUMS

The median size for present courts is 48 feet by 85 feet. Several of the smaller colleges favor 45 feet by 85 feet, although the recommended median size is 50 feet by 90 feet. (1)

BACKBOARDS: SIZE AND MATERIAL

"Backboards must be provided, the dimensions of which shall be 6 feet horizontally and 4 feet vertically. These backboards shall be made of plate glass or wood, or of any other material that is flat and rigid. The faces of the backboards shall be painted white." (7)

POSITION OF BACKBOARDS

"The backboards shall be located in a position at each end at right angles to the floor, parallel to the end lines, and with their lower edges 9 feet above the floor. Their centers shall lie in the perpendiculars erected at the points in the court, 2 feet from the midpoints of the end lines. The faces of the backboards shall be 15 feet from the far edges of the free throw lines." (7)

SPECTATORS KEPT 3 FEET FROM BACKBOARDS

"The backboards shall be protected from spectators to a distance of at least 3 feet behind and at each end." (7)

REQUIREMENTS FOR GYMNASTIC ACTIVITIES

CEILING HEIGHT

"Dropped beams or pipe hangers on which suspended equipment is attached should never be less than 18 feet from the floor. The ideal height is 20 feet to beams or ceiling, and 22 feet is the maximum. Where greater ceiling heights are used it is necessary to provide expensive and unsightly pipe hangers dropped from the beams for the proper attachment of suspended equipment." (2)

The questionnaire sent out to physical directors indicated that "ceiling height (in existing gymnasiums) showed considerable range; the upper height varying from 20 to 65 feet and the apparatus supports varying from 18 to 30 feet. The median figure for the upper or peak height was 30 feet and for the apparatus supports 22 feet. The recommended heights approximated these figures." (1)

WALLS

The walls to a height of 6 feet should be left as clear as possible to permit the installation of gymnasium equipment. "In a well-planned gymnasium, the only breaks in the walls which should interfere with the placing of gymnasium equipment are doors, which should be limited in number." (2) In school and Y. M. C. A. gymnasiums a window is frequently provided through which the physical director can obtain a full and unrestricted view of the gymnasium floor while seated at his desk, but this is seldom done in college gymnasiums,

The doors should be at the corners of the room to facilitate placing of bleachers.

RUNNING TRACKS AND BALCONIES

There is a decided tendency to eliminate running tracks and spectators' balconies in the newer gymnasiums. The running track is being omitted as the expense is not justified by the amount of use, and spectators' balconies have little value, as generally only a partial view of the first floor is obtained except by those in the front row.

Should special considerations warrant the inclusion of the balcony or running track it should not exceed 6 feet 6 inches width for a 60 by 90 foot gymnasium or smaller, as it will seriously interfere with basketball. The ideal clear height above the floor is 12 feet. The balcony should in no case have less than 10 feet in the clear from the underside as a lower height would prevent the attachment or installation of certain pieces of equipment.

STORAGE SPACE FOR GYMNASIUM EQUIPMENT

One of the most common errors in gymnasium design has been the failure to provide sufficient space for storage of gymnasium apparatus. For the ordinary gymnasium not over 60 feet by 90 feet in size the apparatus storage room should approximate 400 square feet in area. The door should be at least 5 feet in the clear. The flooring of the gymnasium should extend into the storage room on the same level without a break or sill.

SEATING ACCOMMODATIONS FOR SPECTATORS

BLEACHERS

The proper handling of spectators is an important item in the design of a gymnasium. For the large gymnasium or building containing several gymnasium floors the problem is comparatively simple, since one of the rooms may have permanent seats. For the small gymnasium where space and money are limited, the provision of adequate spectator space may be a problem. However, it should not be overlooked that adequate spectator space may be a real income-producing asset to a club. Failure to make ample provision for space for bleachers may be a penny-wise and pound-foolish policy.

There are three major types of bleachers in use: the type that hooks into the wall, the roll type and the portable type. Up to five-row capacity, the type that hooks into the wall requires less storage space and is probably less expensive. Beyond this height it is necessary to install intermediate supporting horses which reduce this saving as the height increases. The Y. M. C. A., which seldom has over five-rows bleacher capacity, favors the wall-attached type of bleacher but this type lacks the flexibility of use of the portable type which may be arranged in different ways, either for interior or exterior use.

STORAGE SPACE REQUIRED FOR BLEACHERS

It is very important when planning a gymnasium to provide ample storage space for bleachers whether they are included in the original contract or not. The floor area of the storage for wood bleachers should be one-eighteenth of the floor space occupied by bleachers when erected. (Steel bleachers require one-thirteenth.) As most bleachers come in 16-foot sections, it is advisable to have the storage room 18 feet long. The width may vary according to the requirements of the particular plan.

The accompanying plan shows that spectator entrances at the corners of the gymnasium will give a greater number of seats with good view than spectator entrances at the center of the gymnasium. Entrance aisles at the corners also add to the visibility of corner seats. Consideration should be given to proper location of doors in relation to bleachers even if they are not in the original specifications or contract, as there are cases where failure to consider their installation has resulted in a serious handicap at a later date when bleachers were installed.

It will be noted from the accompanying plan that the section with entrances at the corners permits 13% more seats and a larger proportion of the seats have good vision than the section with the center entrance.

MINOR ATHLETIC ACTIVITIES

VOLLEY BALL

The playing surface for volley ball, 30 by 60 feet,* is almost identical with the minimum court size for basketball, 35 by 60 feet.

HANDBALL

"The standard game of handball is played in a four-wall court, 15 by 15 by 30 feet, but a simple and entirely satisfactory handball game is played with one, two or three walls. In fact, the demand for handball courts in college gymnasiums has been so great during the past few years that courts have been improvised wherever a smooth wall of at least 150 square feet and a distance of 25 or 30 feet of floor space could be found.

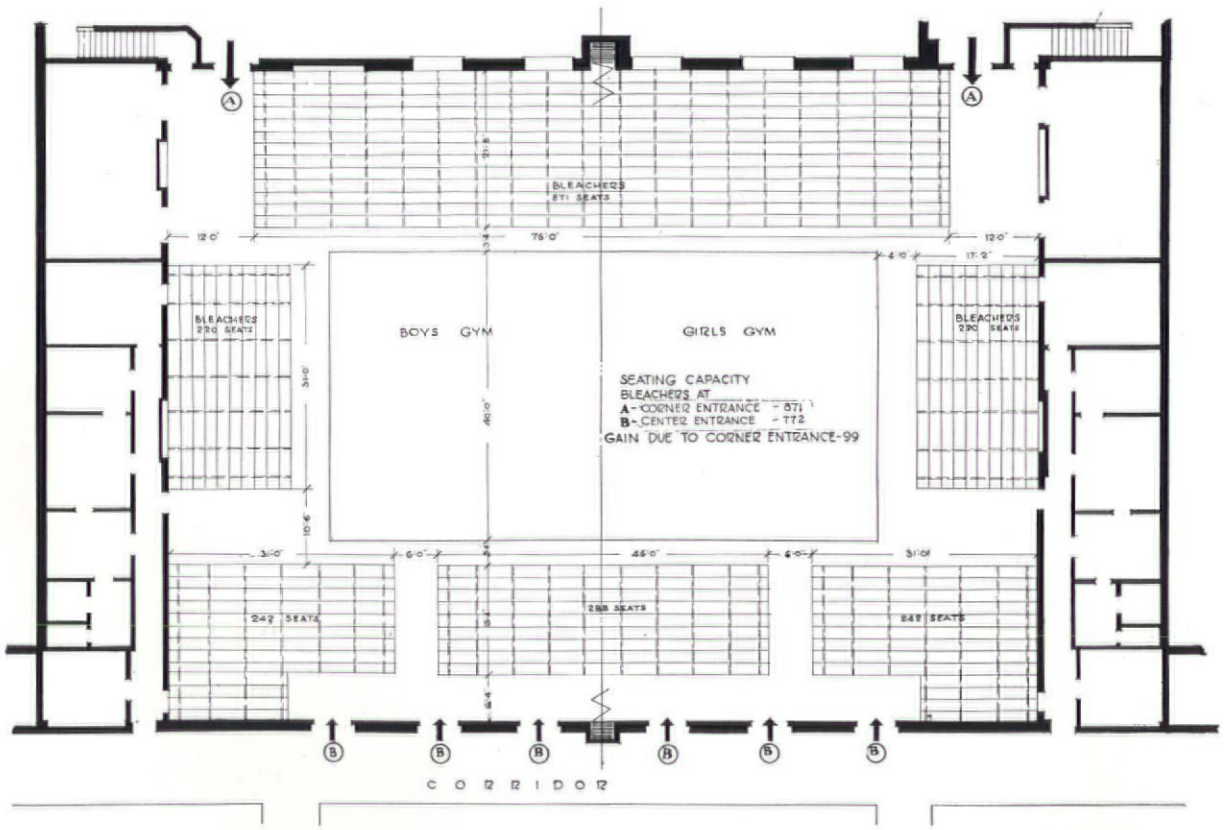
"In planning a new gymnasium building for a college or school, one standard handball court might be provided for each four hundred students and faculty. In addition to the standard four-wall courts, one long wall in every gymnasium should be constructed of smooth material and as many one-wall handball courts as possible be laid out on the wall and floor. These courts can be used when the gymnasium is not in use for classes or basketball.

"A good size for a one- or two-wall court is 16 by 20 feet for the playing space on the wall and 20 by 34 feet on the floor. There should be at least 10 feet of clear space behind the back line on the floor."

*The size of the court may be modified for either indoor or outdoor informal games to accommodate larger or smaller groups to suit local requirements. It is urged that the standard size court be used in all match games, where possible. (8)

SQUASH RAQUET AND SQUASH TENNIS

These two games are gaining in popularity very rapidly. The space to be provided will depend on local conditions and policy of the athletic director.



BLEACHER LAYOUT

BENJAMIN FRANKLIN HIGH SCHOOL
ROCHESTER, NEW YORK
EDWIN S. GORDON, ARCHITECT

Corner entrance "A" gives better seating arrangement than center entrance "B".

CORRECTIVE GYMNASIUM

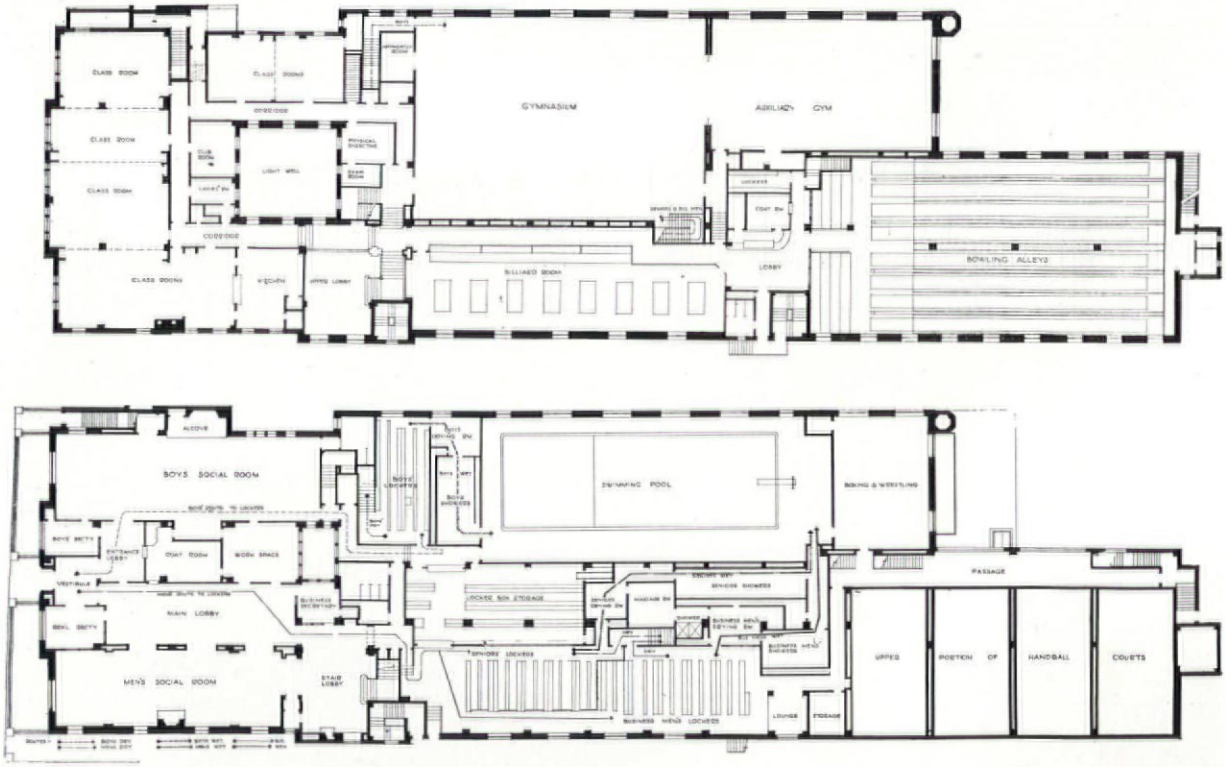
A room preferably approximately 25 by 50 feet should be provided for individual student work or for the work of smaller groups needing special corrective attention.

DIRECTOR'S OFFICE

"The efficient administration of the physical training department depends in large measure upon the location of the offices of the physical directors in relation to the rest of the rooms of the department. The offices should be easily accessible to gymnasiums, dressing room, anthopometric or examining room and athletic field. Each gymnasium should be provided with separate director's office so located as to permit a view of gymnasium floor." (5)

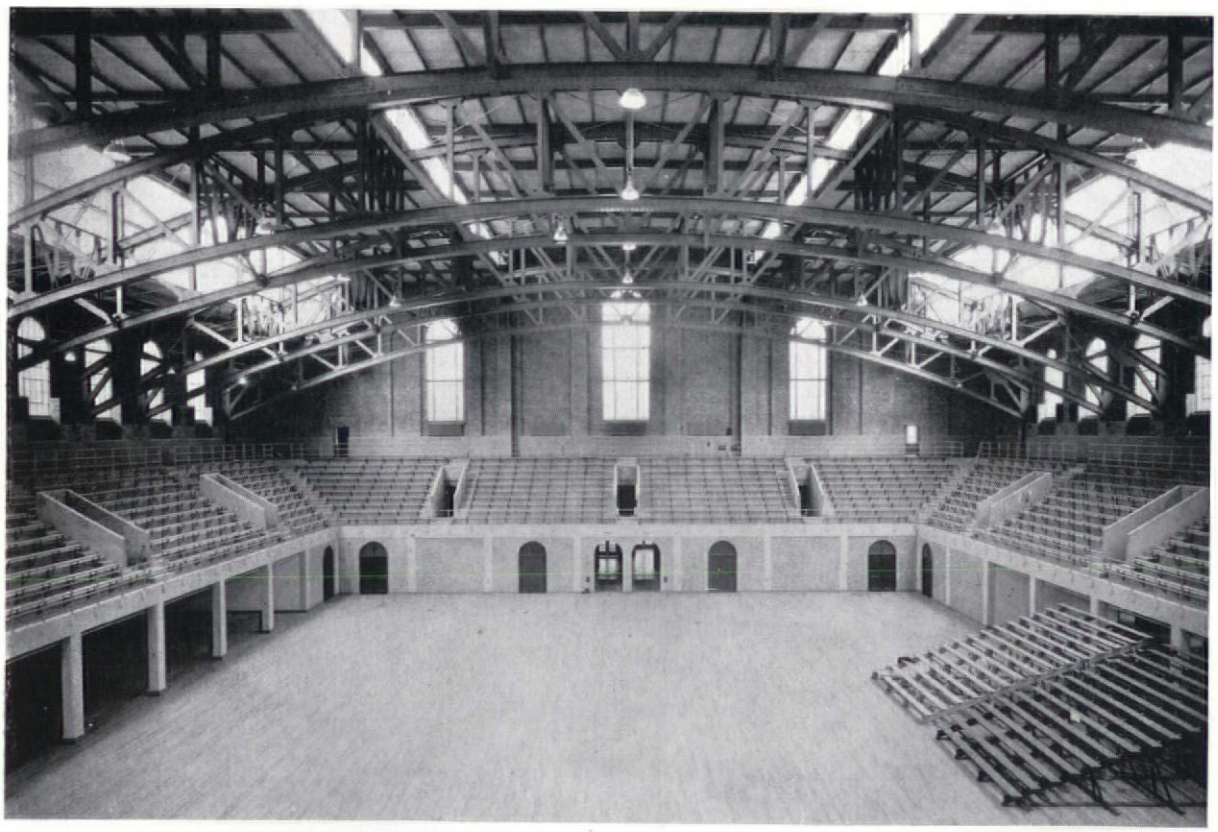
Equipment should consist of instructor's desk, instructor's chair, visitors' chairs, filing cabinet, bookcase, first-aid cabinet. In the smaller gymnasium where separate storage facilities are not provided for athletic supplies, the director's office should have a cabinet for storage of basketballs, handballs, indoor baseballs and other similar gymnasium equipment. Provision should also be made for locker and shower in lavatory for physical director.

MEN'S RECREATION BUILDING
PENNSYLVANIA STATE COLLEGE
CHARLES Z. KLAUDER, ARCHITECT



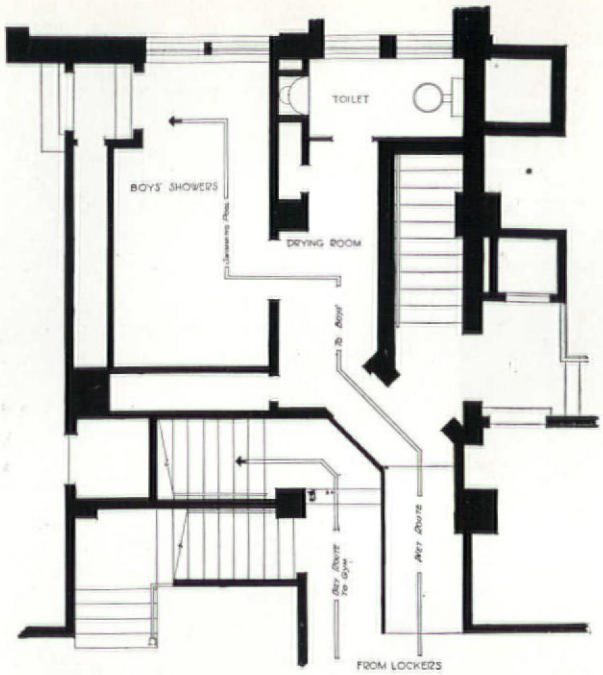
Y. M. C. A. BUILDING
GERMANTOWN, PENNSYLVANIA
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS

Traffic lanes for men and boys kept entirely separate.

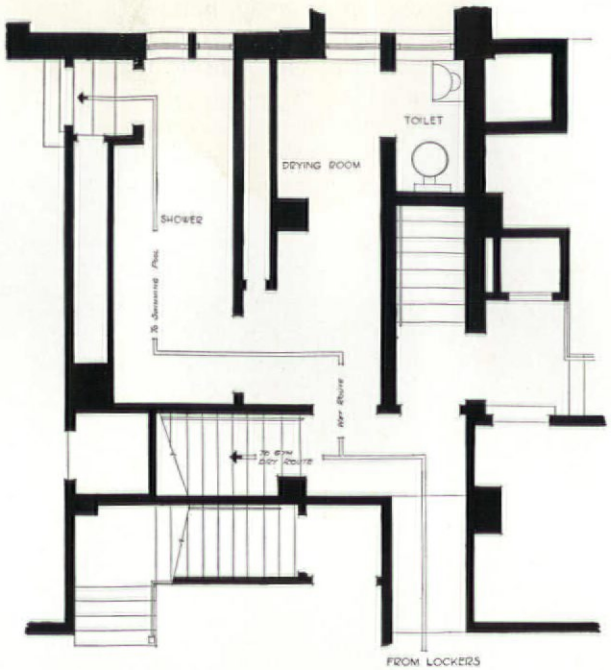


MEN'S RECREATION BUILDING
PENNSYLVANIA STATE COLLEGE
CHARLES Z. KLAUDER, ARCHITECT

Portable bleachers may be used in addition to permanent seating arrangement.



PLAN A—ORIGINAL LAYOUT
Y. M. C. A. BUILDING, EASTON, PENNSYLVANIA
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS



PLAN B—IMPROVED LAYOUT
Plan changed to obtain separation of wet and dry traffic lanes.

EXAMINATION ROOM

This should be located adjoining the physical director's office, with access from the locker room. It should be equipped with scales, lounge, rest chairs, first-aid cabinet and all equipment necessary for physical examination.

TRAFFIC CIRCULATION IN A GYMNASIUM

The ideal plan is one in which corridors are eliminated. Although it is not possible to eliminate corridors entirely, "second (or third) floor rooms should be approached by stairs so placed with reference to a pair of rooms, that second (or third) floor corridors may be reduced to a minimum." (1)

"When it is necessary to cross wet or muddy ground before reaching the lockers or gymnasium, ample provision must be made on the line of circulation for the storage of overshoes, or the cleaning of shoes, and the member must be able to go to his locker and from his locker to the gymnasium without having to pass over the space that he has already walked on, thus avoiding tramping mud into the gymnasium." (10)

Consideration should be given to the proper routing of spectator and participant traffic. The latter should be further separated into independent circulation systems for men and women or men and boys when there is a dual use of the building. Each of these classes should have further separation between wet and dry traffic from locker room to swimming pool or gymnasium.

Routing of persons from the entrance to locker rooms is a comparatively simple matter for most gymnasiums, but for gymnasiums handling two or more classes of memberships (such as co-educational schools or the Y. M. C. A. and Y. W. C. A.) it is very desirable to provide for complete separation of the different classes of users. In association buildings separate entrances for the boys and men should be provided whenever the site conditions permit. When this is not possible, it is well to separate the two classes of membership as near the entrance as possible.

Traffic to and from the gymnasium should not cross the traffic to and from the showers and swimming pool, as water may be tracked on to gymnasium floors.

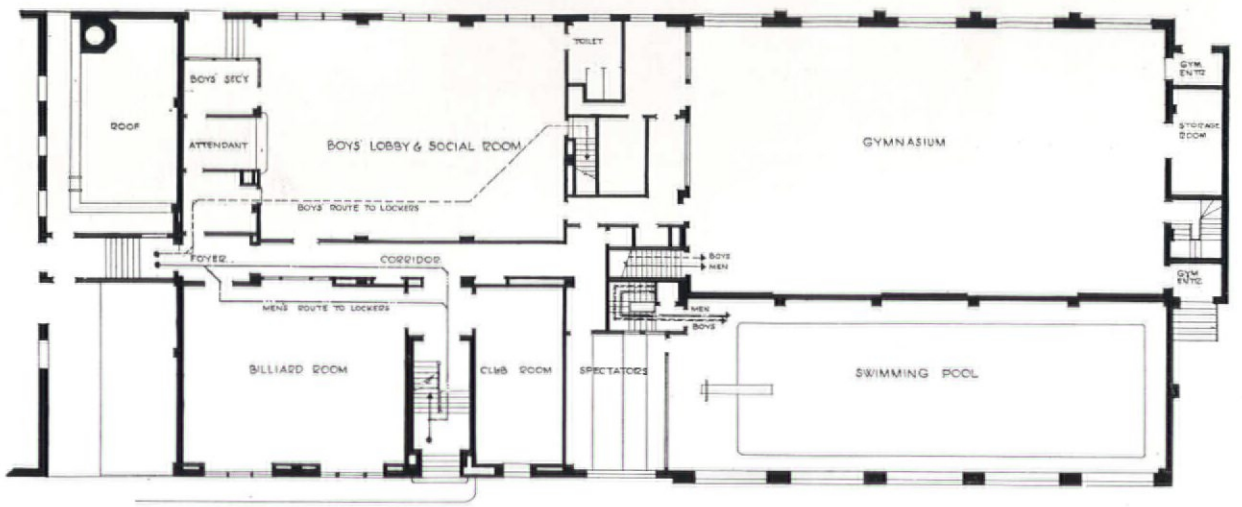
When two classes of membership use the same gymnasium, separate means of circulation should be provided between locker rooms and gymnasium or pool when possible, although compromises will have to be accepted at times due to site conditions or other limiting factors.

Plan A, Y. M. C. A., Easton, Pa., shown above, shows the original traffic arrangement on a limited site, and Plan B shows how this was modified to obtain a greater degree of separation, even under very limited conditions.

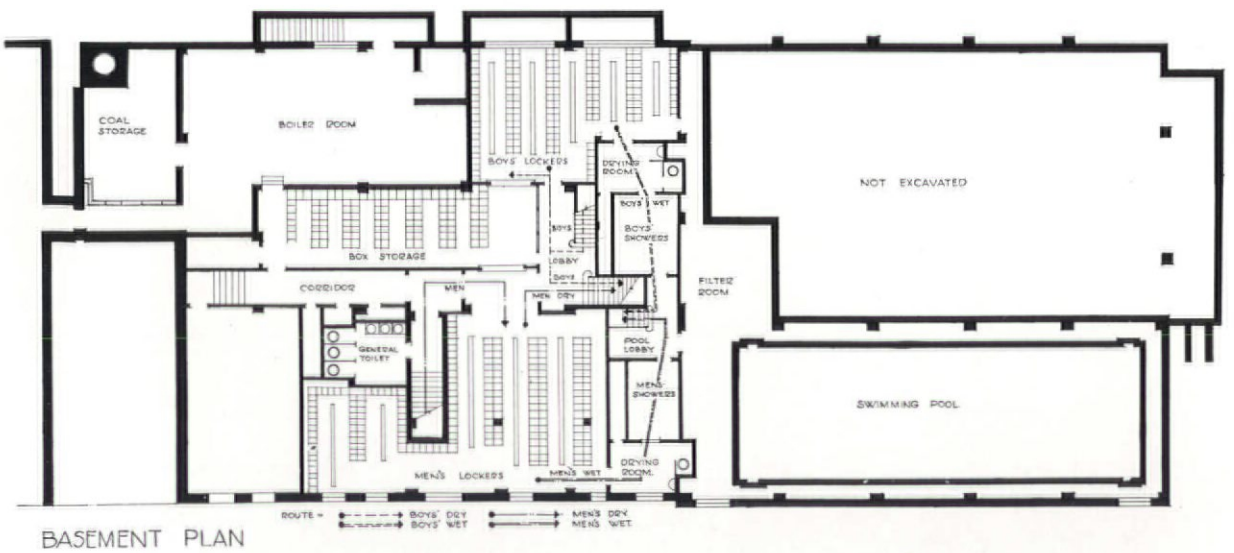
Traffic circulation for spectators is not a serious problem in most association or school buildings, but for the larger high school or college gymnasiums or gymnasiums used as auditoriums considerable thought should be given to this problem to prevent congestion at any point. For the dual-use gym it is frequently desirable to have special exits from the gym floor to the outside for use of audience or spectators. It is also well to consider the location of public toilets in relation to spectator space, as the general public should not be admitted to the toilets off the locker rooms. Public traffic should be entirely separated from the circulation to and from the gym floor.

In planning circulation for boys as much of the stair and hall space should be open to observation by attendants as can be conveniently arranged. The arrangement in plan shown below is such that a large portion of circulation is visible to the tote-box attendant.

Traffic lanes to the pools should always enter through the drying and shower rooms. Where pools are to be used by both adults and children, as in schools or the Y. M. C. A. or Y. W. C. A., it is well to have the adults enter the pool room at the deep end of the pool and the younger group enter at the shallow end. (See page 76.) Stairs should be avoided when possible between locker room and pool, as there is always a danger of slipping.



FIRST FLOOR PLAN



BASEMENT PLAN

Y. M. C. A. BUILDING, NORRISTOWN, PA.
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS

Plans showing careful study of traffic requirements. Traffic lanes to swimming pool should always enter through drying and shower rooms.

CONSTRUCTION OF GYMNASIUM FLOORS

SELECTION OF WOOD

"If there is one element upon which there is general agreement it is the use of maple wood as the top flooring. Hard pine and oak are also used, but should be avoided as they splinter." (1)

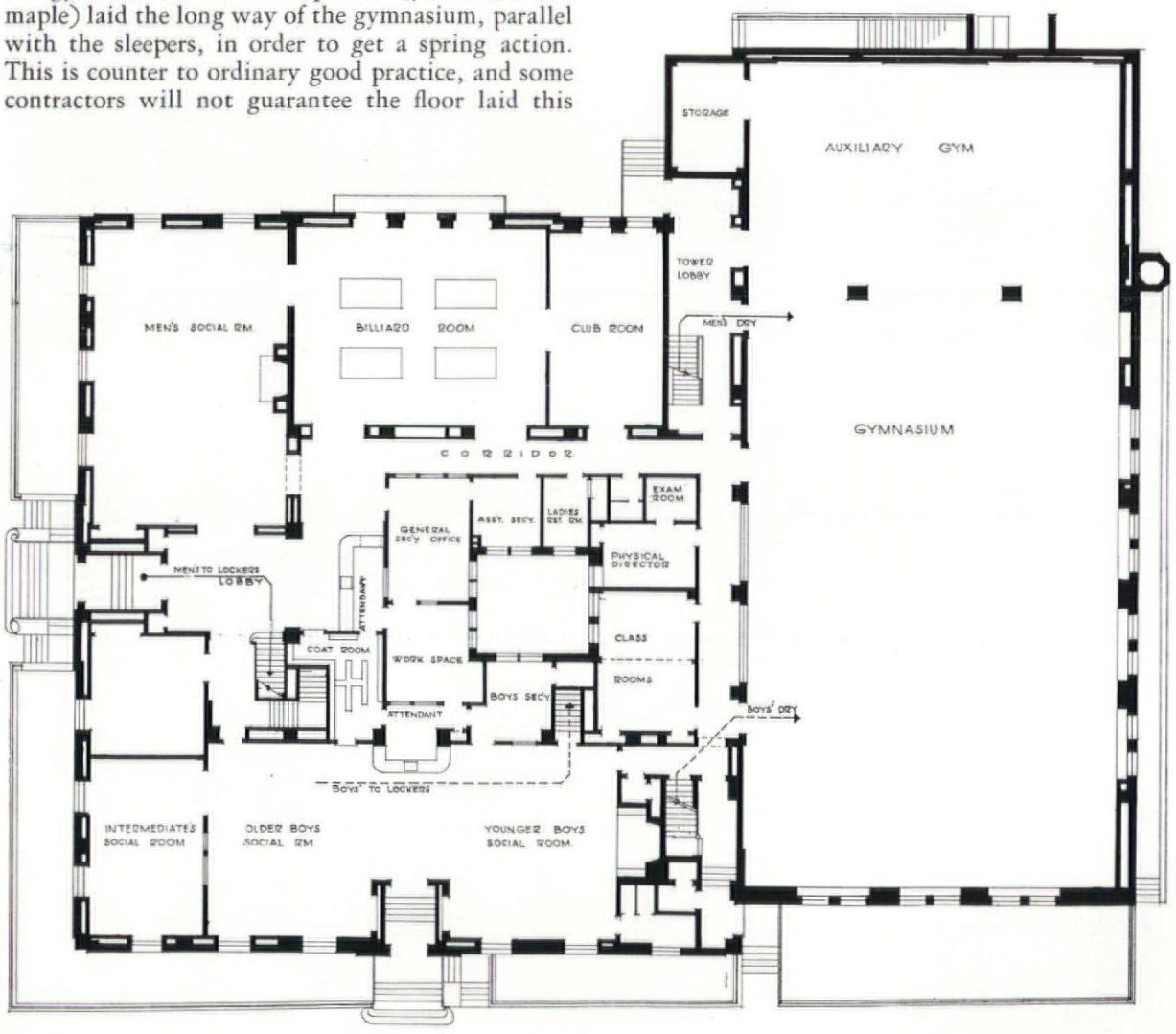
SINGLE OR DOUBLE FLOOR

There is a difference of opinion as to whether a single or double floor should be used. It is a problem of getting a floor which will stand concentrated loads, from heavy floor apparatus, or the vertical lifting strains of floor-guyed pieces, and yet have sufficient spring to be comfortable for the players.

If double flooring is used the sub-floor should be laid diagonally over sleepers laid the long way of the gymnasium, and the top floor (7/8 to 1 1/8-inch maple) laid the long way of the gymnasium, parallel with the sleepers, in order to get a spring action. This is counter to ordinary good practice, and some contractors will not guarantee the floor laid this way; but there are many gymnasiums where this type of floor has been used for some years with entire satisfaction.

"If a double floor is not used, the single floor should be of hard maple not less than 1½ inches thick. To prevent single flooring from pulling up when subjected to vertical strains, the ends of all boards should terminate directly over the wood joists." (2)

Y. M. C. A. on corner lot. Entrance for men on different street from boys' entrance, with complete separation of facilities which is desirable.



Y. M. C. A. BUILDING, WILLIAMSPORT, PENNSYLVANIA
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS

FLOOR FINISH

Oil varnish and natural finish are nearly equal in popularity. (1)

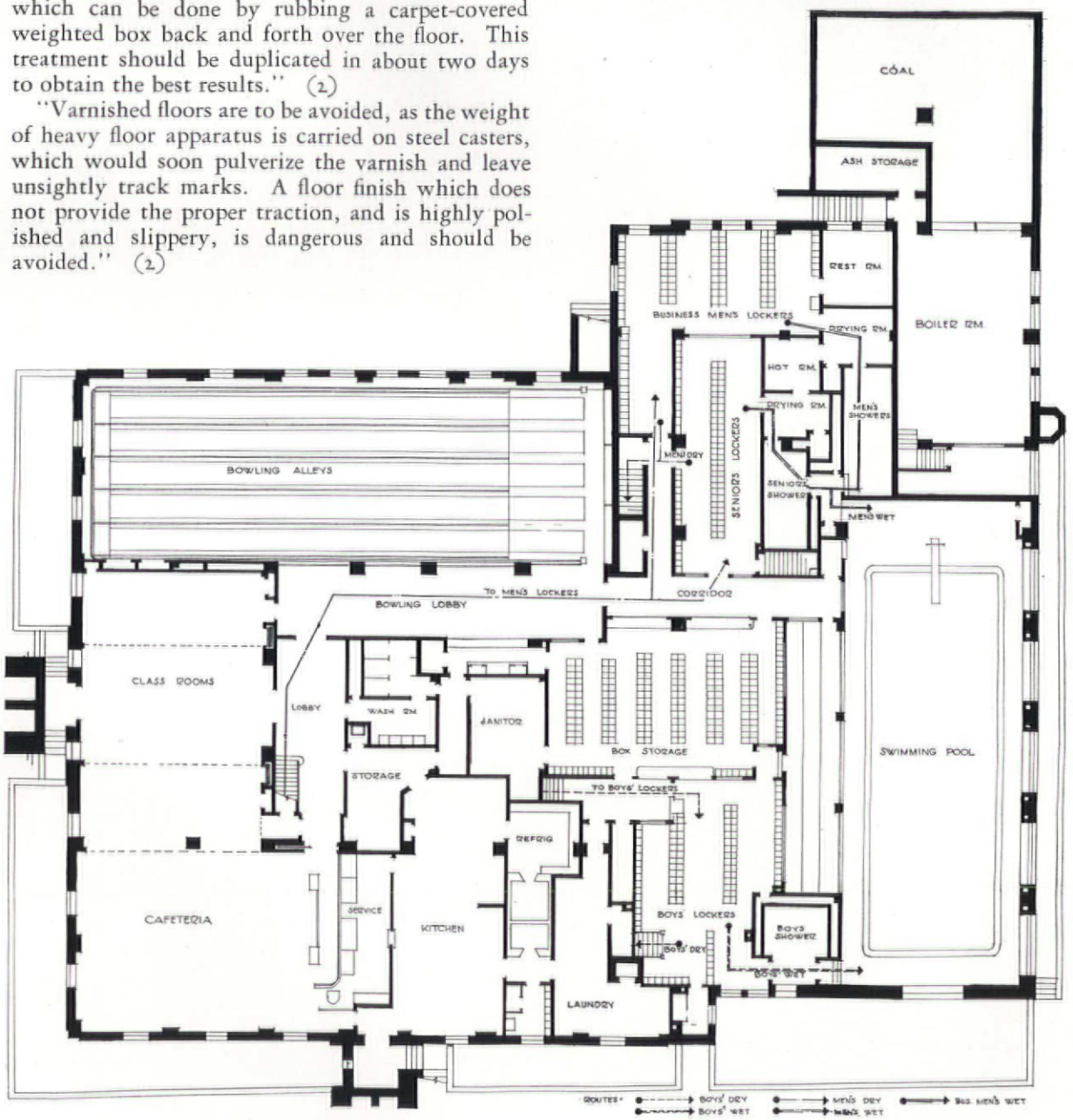
"Raw linseed oil has been commonly used for finishing the floor. This is best applied at or near the boiling temperature by one person, a light coat being brushed on with the grain of the wood. Before this has had a chance to cool the oil which has not instantly penetrated the floor should be wiped off by a second workman. A third workman should follow the second, vigorously and thoroughly wiping the floor dry. The final finish is polishing, which can be done by rubbing a carpet-covered weighted box back and forth over the floor. This treatment should be duplicated in about two days to obtain the best results." (2)

"Varnished floors are to be avoided, as the weight of heavy floor apparatus is carried on steel casters, which would soon pulverize the varnish and leave unsightly track marks. A floor finish which does not provide the proper traction, and is highly polished and slippery, is dangerous and should be avoided." (2)

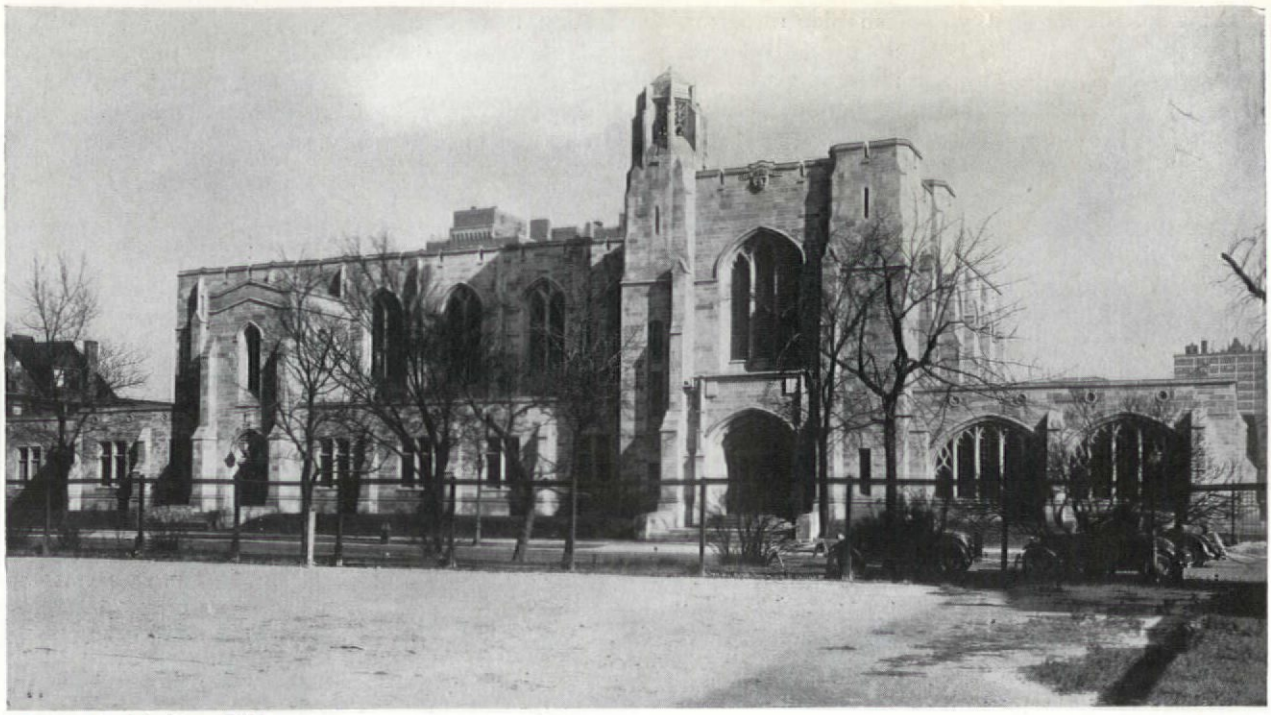
BASE ANGLE

A 2-inch by 4-inch angle iron with the 4-inch side up should be placed against the wall, as heavy movable floor apparatus have extended iron bases which will damage a wooden base.

Separation of wet and dry routes prevents tracking dirt into swimming pool and water into gymnasium.



Y. M. C. A. BUILDING, WILLIAMSPORT, PENNSYLVANIA
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS



Courtesy American Federal Cement Tile Co.

GYMNASIUM, UNIVERSITY OF CHICAGO

WALL CONSTRUCTION

The tendency in recent gymnasiums, according to some authorities, seems away from the use of equipment attached to the wall and towards the use of free-standing portable equipment. When this is the case, a glazed tile* will frequently be found a satisfactory material to use on account of the larger size of the units, but brick is generally preferable when considerable heavy equipment is to be attached to the wall.

Cork has been used as a wall covering in some gymnasiums. It may be applied directly to the masonry or to sheathing boards furred out from the masonry wall.

*Regarding the use of tile walls, the Narragansett Machine Co. writes—"If you could live in our business for a few weeks, we think you would more strongly discourage the use of hollow tile for interior gymnasium walls. If you erected a gymnasium to be used for nothing but basketball without a single piece of gymnasium apparatus, you would find hollow tile walls would not hold basketball backstops which in the great majority of cases are braced out from the walls by means of pipe arms or brackets. We also believe that you should go very slowly on such new ideas as cork facing for gymnasium walls."

As most gymnasiums are not kept warm at all times, it is desirable to have a wall surface that is easily heated. The surface of a wood or a cork-over-wood lining to a masonry wall can be brought to room temperature in approximately 10 minutes, whereas if brick were substituted for the wood or cork lining it would take from 6 to 8 hours to bring the surface to room temperature (utilizing in both cases twice the amount of heat that would be required to maintain an even temperature once the wall were warm). (14) This not only effects a saving in cost of heating the room to the desired temperature, but practically eliminates danger of moisture condensation. The room is also more comfortable, for even though the air temperature may be satisfactory a cold masonry wall absorbs more radiant heat from players' bodies than a wood or cork-surfaced wall. Cork has the additional advantage of lessening the reverberation of a gymnasium room. This is an important problem when the gymnasium is used for both auditorium and gymnasium purposes.

In order to obtain a light-colored wall which is

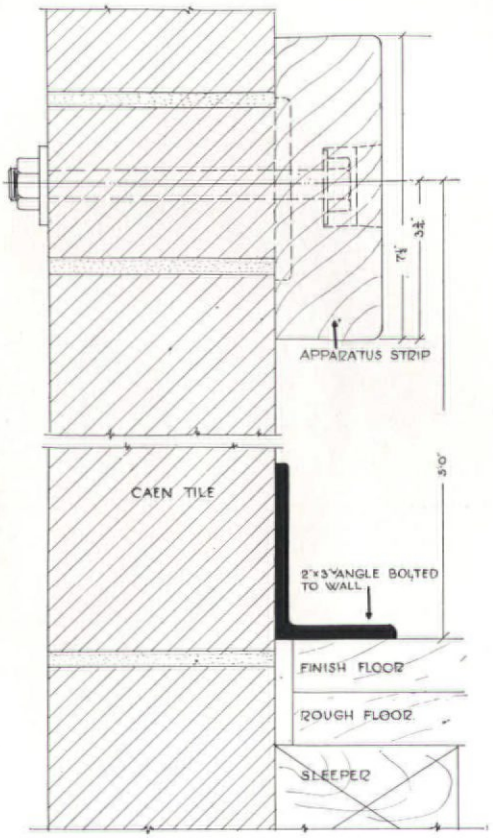
sound-absorptive and yet washable, it might be desirable to use cork carpet for wall covering. Whatever the surface used, it should be one that can be washed easily, as the walls become soiled very quickly from dirt-covered basketballs or indoor baseballs. Paint is generally unsatisfactory as it costs too much to be kept looking well.

APPARATUS STRIP

If wall apparatus, such as pulley weights, mat hangers, wand racks, etc., are to be used, it is advisable to install a heavy 8-inch wide apparatus strip centered 5 feet from the finished floor. This strip should extend around the entire gymnasium and should be bolted direct to the walls. To prevent injury due to projecting bolt heads, the bolt holes should be countersunk so that the heads of the bolts are flush with the face of the apparatus strip.

DOORS

Doors to a gymnasium room or exercise room should open out, as there would be danger of a player being injured by running into a door opened inward by someone entering the gym. Doors to shower rooms or swimming pools should be covered with a rustless metal such as copper, aluminum, or chromium nickel steel.



DETAIL OF APPARATUS STRIP BASE ANGLE AND FLOORING
Y. M. C. A., GERMANTOWN, PA.
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS

ROOF USED AS GYMNASIUM

There is a decided tendency in many cities to utilize the roof space of school, club or gymnasium building for exercise space. When this is done, there is always the problem of providing a suitable playing surface which will be weatherproof and withstand the action of sun and freezing. One of the most satisfactory methods of treating such a roof has been to use wood ship-decking. The entire roof should be covered with netting to eliminate any possibility of an accident to a player or of a ball getting out and injuring someone on the ground.

The lighting fixtures must be recessed in the guard netting to eliminate any possibility of their being damaged or of their interfering with the gymnasium activities. Naturally special care must be taken to prevent any water entering the fixture. European gymnasiums make provision generally for sun baths on gymnasium roofs.

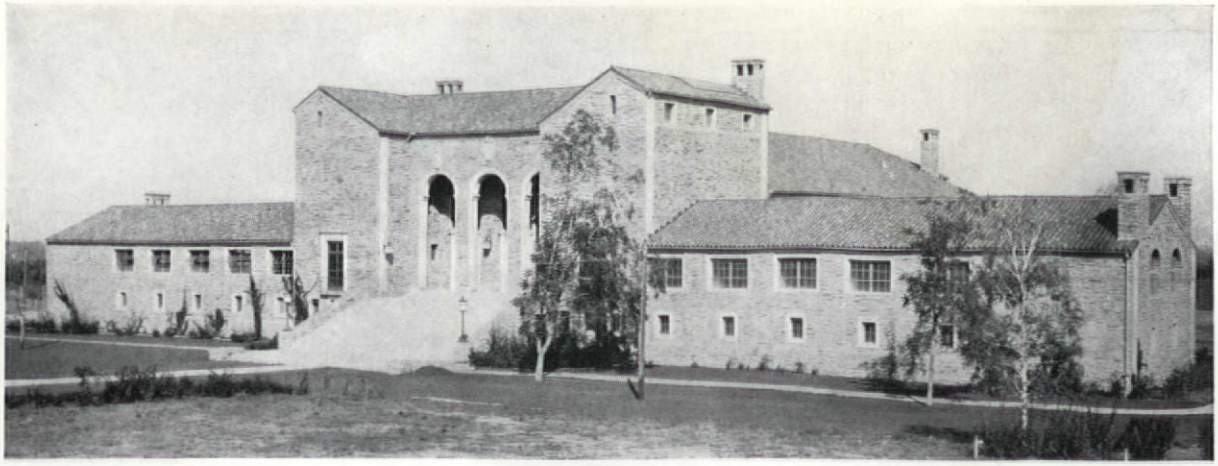
DAY-LIGHTING A GYMNASIUM

WINDOWS

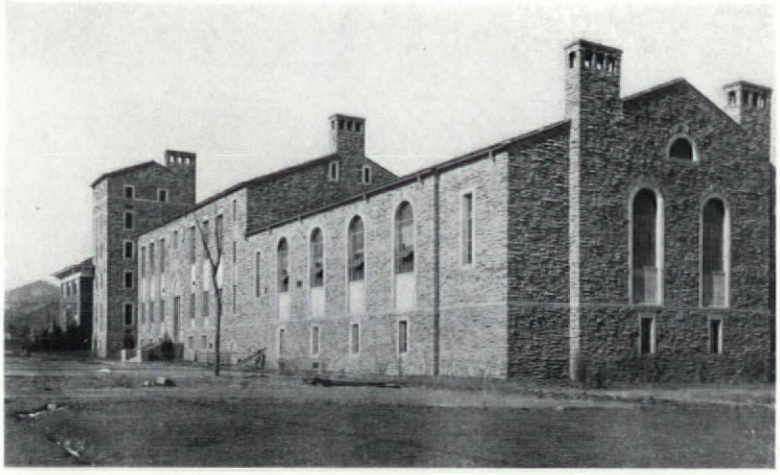
In recent gymnasiums "the side wall area used for windows approximates 25%. The median of both present and recommended height of windows above the floor is 6 feet. Where balconies or tracks are present, 15 feet is the median." (1)

Courtesy American Federal Cement Tile Co.

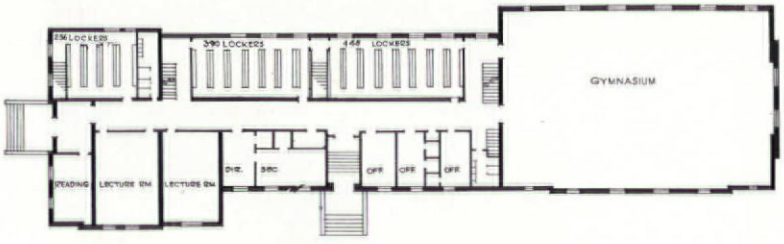
ROOF CONSTRUCTED OF FEATHERWEIGHT CONCRETE INSULATING ROOF SLABS



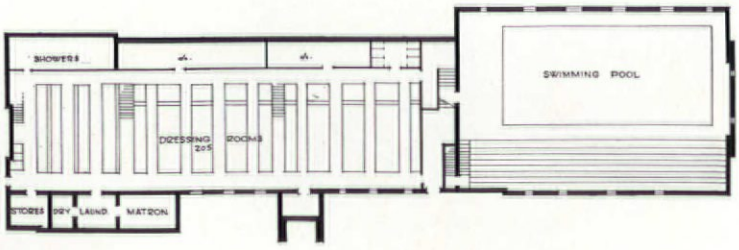
MEN'S GYMNASIUM



WOMEN'S GYMNASIUM



FIRST FLOOR



BASEMENT PLAN

PLANS OF WOMEN'S GYMNASIUM.
UNIVERSITY OF COLORADO
DAY AND KLAUDER, ARCHITECTS

The louver type of window with mechanical operation is the best type for use in the large gymnasium room as the windows may be operated without opening the guard netting. The windows may also be opened for ventilation in rainy weather without danger of rain blowing into the gymnasium. In the large gymnasiums these windows can be operated electrically.

If the locker room is on the first floor or basement, double-hung windows should be avoided since they give no privacy when open. It is better to pivot the windows so that they screen the interior of the room when open. They should be high enough so that persons using the room will not cast shadows on them, and of obscure glass, rough side out to prevent dirt settling on the inner surface. Allow for fly screens and winter sash.

WINDOW SCREENS

"When windows are washed, the screens should slide out of the way, rather than swing, to fall back into place when the washing is done.

"These screens should be built on a heavy angle iron frame and should be made of No. 8 wire at least, to withstand the impact of a shot or a medicine ball. A thinner wire may save a little money in first cost, but will soon fall out of shape.

"The frames, hinges and locks of screens should be secured by expansion bolts in the brickwork, not by means of screws in wooden plugs." (10) Here is one of the chief sources of trouble in installation of gymnasium fixtures and equipment.

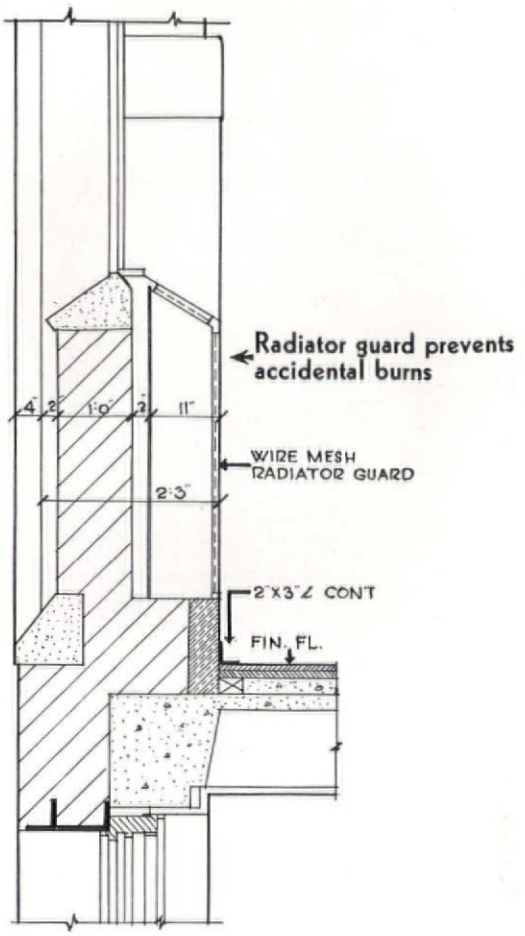
SKYLIGHTS

"The objection to skylights, besides leakage which can generally be avoided by correct design, is loss of heat. Most gymnasiums having skylights are cold, as the cold drops from the skylights very rapidly." (10)

Also it is difficult to wash a skylight without wetting the floor. It would seem advisable for gymnasiums to follow the lead of most of the newer industrial plants, which are abandoning skylights for saw-tooth construction or monitors with the glass perpendicular. This method of lighting has the advantage of being less liable to leak, and there is less difficulty encountered in preventing condensation water dripping on to the floor. With either the saw-tooth or the monitor type of overhead lighting, it is easier to get proper ventilation and double windows cut down the heat loss.

GLASS WALLS

The side walls of the gymnasium might well be built of some of the newer forms of hollow glass units now on the market. (See pages 59 to 62.) These will not only furnish sufficient heat insulation better than glass windows, but some of these units are sufficiently strong to withstand any shock they may be subjected to. If such a wall were to be used, it would be advisable to have a channel or "T" beam in the wall 5 feet from the floor for the attachment of apparatus.



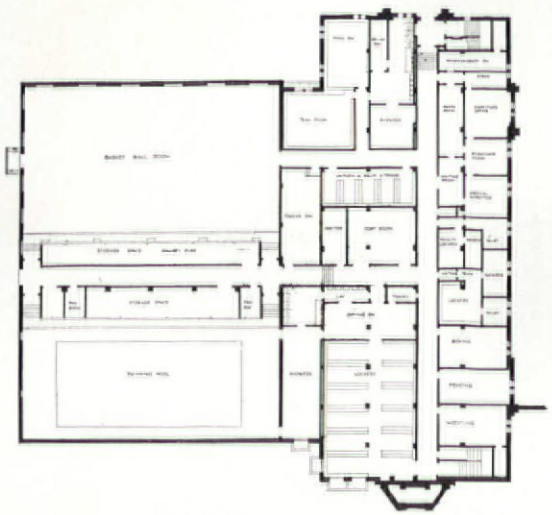
SECTION THROUGH RADIATOR ENCLOSURE
WHITE PLAINS HIGH SCHOOL, NEW YORK
STARRETT AND VAN VLECK, ARCHITECTS

LOCKER ROOMS AND LOCKERS

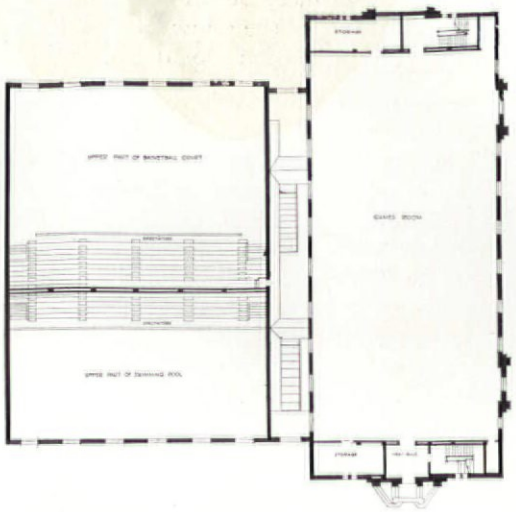
FOR MEN OR BOYS

The type of locker system used will determine the necessary space, but for preliminary estimate of space requirements for men's gymnasiums the following formula prepared by the Committee on Construction and Material Equipment of the Society of Directors of Physical Education in Colleges will be found useful.

$$\frac{\text{"8 sq. ft. (min. per locker) x no. of lockers}}{\text{32 sq. ft. (min. per student)}} = \text{load that may be carried.}$$

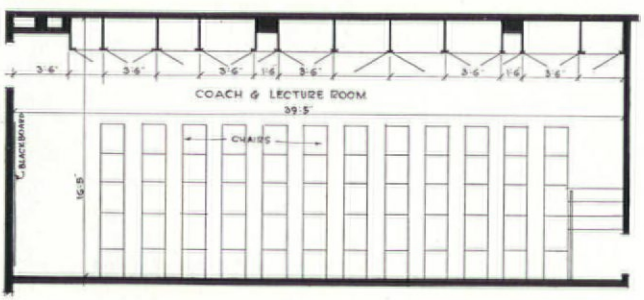


MAIN FLOOR PLAN
GYMNASIUM BUILDING



SECOND FLOOR PLAN

SECTION ELEVATION



PLAN

DETAIL OF COACH'S
LECTURE ROOM

THE HILL HIGH SCHOOL
POTTSTOWN, PENNSYLVANIA
CHARLES Z. KLAUDER, ARCHITECT

"If the resultant or load that may be carried is equal to or exceeds the actual load which will use the locker room at a certain time, 8 square feet will prove a sufficient allowance; but if the resultant is less than the actual load, the allowance per locker must be increased until loads are equalized. For example:

$\frac{8 \times 200}{32} = 50$, load that may be carried.

If the actual load is 100, then 16 square feet will be required per locker. If the actual load is only 40, then 8 square feet will be sufficient." (1)

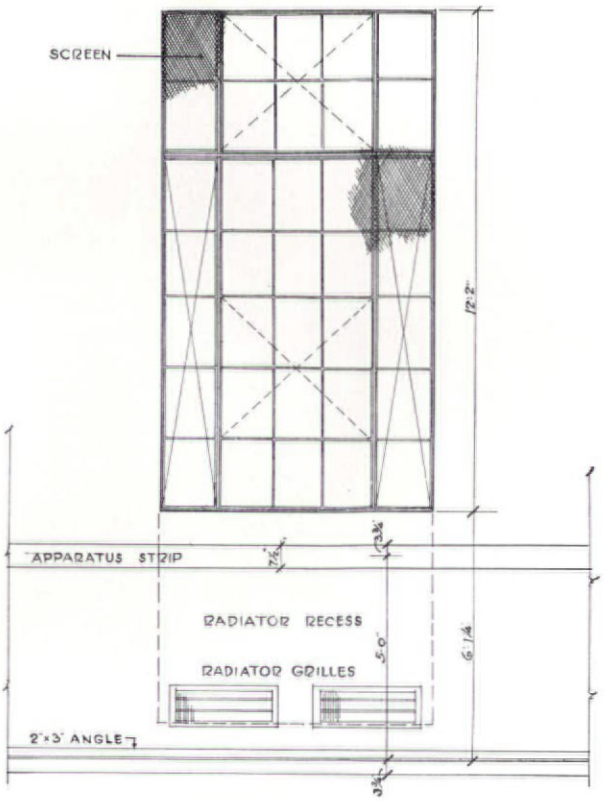
The reason for considering the allowance per locker and per student is that "a locker room built according to an allowance per locker may prove entirely inadequate when the peak load occurs; and likewise, a room built entirely upon an allowance per student may result in a waste of space."

LOCKER ROOMS FOR WOMEN

It is customary to provide private dressing rooms for women, but with changing ideas of modesty this is becoming a less necessary factor and in some cases, especially in the West, the locker systems as used in men's gymnasiums are being installed for women.

There are several types of dressing rooms in use: dressing rooms which contain lockers for the temporary storage of street clothes while the woman is on the gymnasium floor or in the pool and the dressing room which does not contain lockers, the clothes being carried to an outside temporary storage locker. The former type is to be preferred from the standpoint of convenience but when the gym is used continuously it is advisable, with this type, to provide twice as many dressing rooms as the peak load of the gymnasium in order to care properly for incoming and outgoing classes. Where the lockers are outside the booths it is only necessary to provide one-third more dressing rooms than the peak load; but this system is inconvenient, as can be seen from the following discussion of procedure necessary with this type, found in some Y. W. C. A. buildings.

On entering the gymnasium, the woman gets her tote box containing gymnasium suit from a storage rack (generally self-service) in the locker room instead of from a central attendant-controlled locker storage place as in men's gymnasiums. She finds an unoccupied dressing room, where she changes to gym clothes and then carries her clothes to a temporary storage locker outside the dressing room where she also leaves her tote box, taking the key with her. After using the gymnasium she will have to carry her clothes from this locker to some unoccupied dressing room, and later, after taking a shower and dressing, return the tote box to the storage rack. This is inconvenient compared with the system favored by the majority of men's gymnasiums. In addition to the inconvenience of the individual dressing rooms, the cost is considerably more than



ELEVATION OF GYMNASIUM WALL SHOWING RADIATOR RECESSED
Y. M. C. A., GERMANTOWN, PA.
THOMAS, MARTIN, AND KIRKPATRICK, ARCHITECTS

the open type, the installation of individual shower stalls is more expensive, considerable more space is required, and upkeep is more expensive.

Discussion of this problem with the Y. W. C. A. reveals that most of the younger women would not object to the omission of dressing rooms, but the older women, especially those who take gymnasium work for reducing, much prefer the individual dressing room. The solution might be the provision of both types. The men's type is much more convenient for dressing and takes less space than the private room.

One architect says that the majority of school superintendents with whom he comes in contact favor having no more privacy in the girls' dressing rooms than in the boys'. The only difference would be in the shower rooms, where partitions might be installed between the showers. If this system is adopted it would probably be wise to provide special private dressing rooms for use of girls at times when they are unable to use the shower baths. These dressing rooms should be equipped with vending machines for sanitary napkins, lavatory, toilet and incinerator chute. It would be advisable to make

these special dressing rooms easily accessible from the public hall or girls' toilet as well as from the locker room.

In the White Plains High School this problem is met by providing special private dressing rooms equipped with lavatories for some of the girls using the gymnasium.

LOCKERS

The survey conducted by the Committee on Construction and Material Equipment of the Society of Physical Education in Colleges showed that although the majority of recent gymnasiums have been equipped with the permanent type of locker, the majority of physical directors favor the tote-box system. The median of recommended measurement for lockers was 15 by 15 by 72 inches. This same survey found that the combination padlock was gaining favor over the key lock.

Entirely aside from the question of expense of equipment or space occupied by permanent lockers, one factor which influences the choice of the tote-box system is the ability to ventilate properly the tote boxes and to remove odors of stale suits from the dressing room.

LOCKER ROOM FLOORS

In a recent survey concrete was found to be the outstanding material used for locker room floors. Tile, however, is gaining favor. There were a few recommendations for floors covered with linoleum or rubber mats.

The floor should be coved, to facilitate cleaning.

BENCH IN LOCKER ROOM

"The permanent or stationary type of bench is distinctly replacing the movable type." (1)

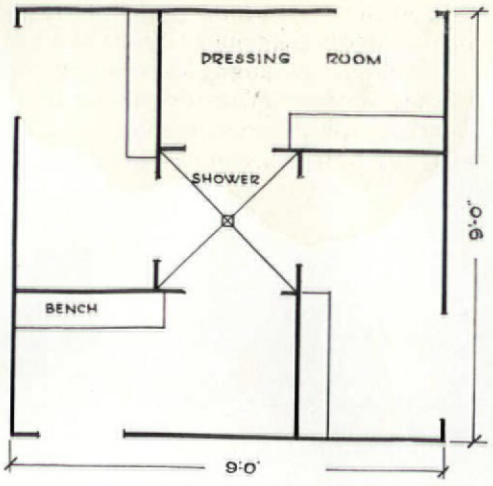
SHOWER ROOMS

FOR MEN

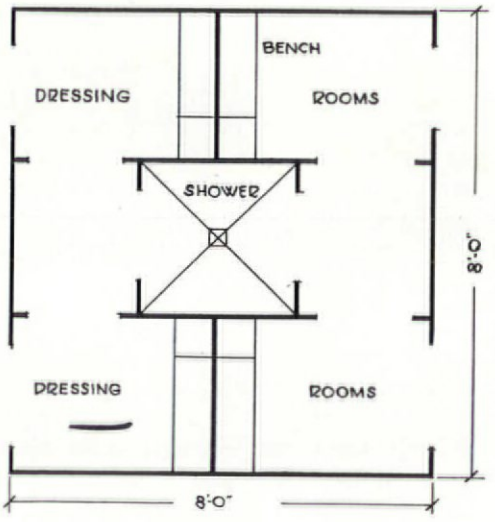
"Present practice indicates the median load per shower to be five men, whereas three is the recommended number. From this we may suggest that the number of showers will depend primarily upon the number of men in the maximum-size class. Thus, if sixty is the largest size class, twenty showers are recommended to facilitate the movement of the class through the shower room. Present construction also indicates the median number of square feet allowed per shower to be twenty-five, which multiplied by the number of showers needed, will give the approximate area required for the main shower room." (1)

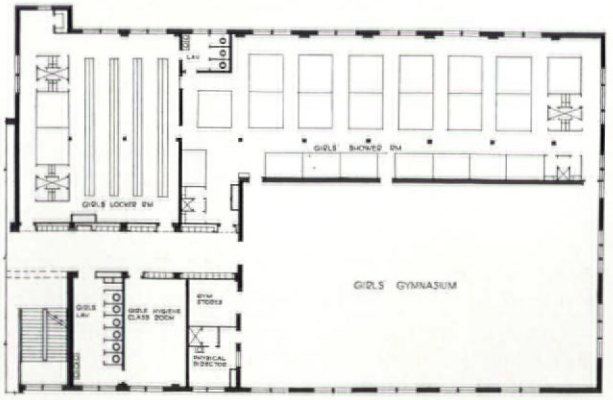
FOR WOMEN

It is customary to combine the shower with the private dressing room. When the shower is used in



SHOWER AND DRESSING ROOMS FOR WOMEN
LOUIS JALLARD, ARCHITECT (10)





GIRLS' GYMNASIUM AND DRESSING ROOM
EAST HIGH SCHOOL, DENVER

connection with a dressing room for a pool there is an exit on the opposite side of the compartment which leads to the pool, thus eliminating any crossing of wet and dry traffic circulation. When the shower is not used in connection with dressing rooms for swimming pools it has only the entrance from the dressing rooms.

SHOWER EQUIPMENT

"The group type of shower, or as some prefer, the individual shower as distinguished from the individual stall type, is nearly a universal choice. A few schools prefer the individual stall." (1) The individual stall type is more favored for use in women's shower rooms.

Speaking of mixing valves, the architectural bureau of the Y. M. C. A. says: "We have been getting very satisfactory operation and economy through the use of separate control valves combined with a master thermostatic mixer placed on each battery of showers, which controls the hot water supply at bath temperature (108° to 110°), so that immediately upon opening the hot water valve one has bath temperature. We have used various kinds of individual shower mixers but find the system mentioned above much more satisfactory."

SHOWER ROOM FLOOR

"In the shower room tile is replacing concrete as the desired flooring. Several kinds of tile are suggested, including mosaic, granolithic, terrazza, and non-slip." (1) Non-slip qualities should be given very serious consideration.

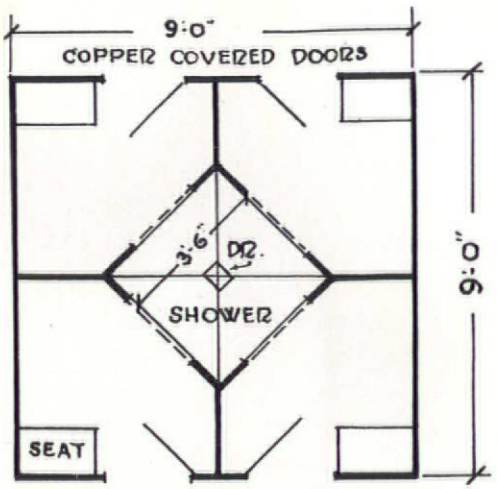
MECHANICAL EQUIPMENT

HEATING

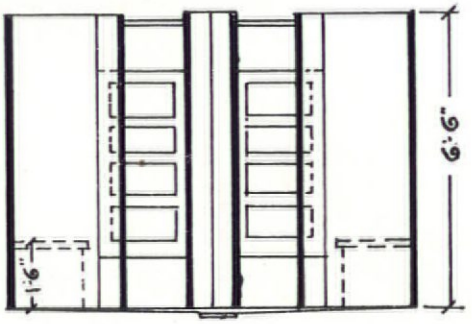
Gymnasium buildings have rather special heating requirements. The gymnasium room, courts and special exercise rooms should be kept at from 55° to 60° F., the shower and swimming pool rooms at 80° F., the locker rooms at 76° F., and the remainder of the building at 70° F.

The gymnasium section may require heat intermittently, while the other portions would require heat continuously. These portions are therefore often separated or zoned and controlled separately. The differential system lends itself particularly to the heating of this type of building, due to adjustability to zoning and the ability to closely balance the radiation to the heat losses by use of the regulating plates.

With the differential system, through changes from 5 pounds steam pressure to a vacuum of 15 inches or less, it is possible to vary the temperature of the radiator from 225° F. or higher for very cold weather or for rapid heating of a room to 133° F. for mild weather. This flexibility makes for comfortable and economical heating.

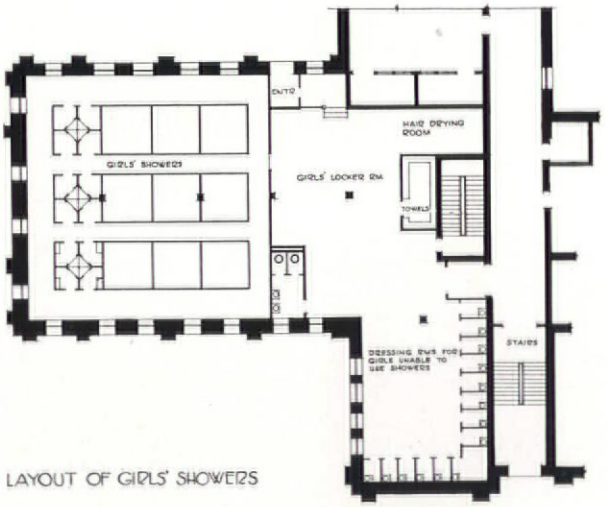


PLAN



SECTION

DETAILS OF SHOWERS



LAYOUT OF GIRLS' SHOWERS

GIRLS' SHOWERS AND DRESSING ROOMS
WHITE PLAINS HIGH SCHOOL, NEW YORK
STARRETT, AND VAN VLECK, ARCHITECTS

The gymnasium-auditorium of the Chicago Turn Verein is heated to only 50° by the direct radiators. The 70° required when used as an auditorium is obtained by the additional output of unit heaters, which are located on either side of the stage.

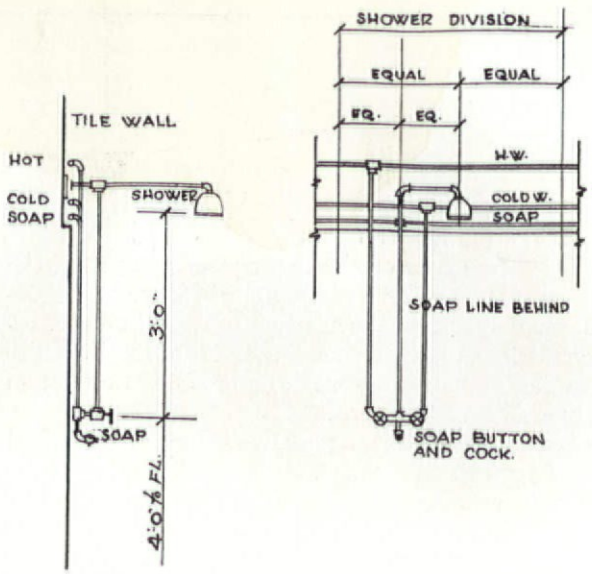
LIGHTING

"Lights must be so placed as not to glare into the eyes of users of the gymnasium or spectators at match games . . . Lights on the ceiling should be so placed as to avoid throwing shadows from the girders. They should be accessible without the use of a scaffolding or ladders. All lights should be recessed and covered with wire baskets securely fastened to wall or ceiling so that the impact of the ball will not shake the lighting fixture."

Light switches should be conveniently located to encourage turning off lights when not in use. In order to prevent boys playing with the lights it will be advisable to use key switches.

CUSPIDORS AND DRINKING FOUNTAINS

Cuspidors and drinking fountains should be provided on the walls of the gymnasium at several convenient points, depending on the size of the gymnasium. A set should be placed near the door leading from the locker room to the gymnasium as the men will want a drink when leaving; and the cuspidor will be needed as a place for the disposal of chewing gum when the men come on to the gym floor. The cuspidor should be a different color from the drinking fountain and they should both be recessed in the wall so as to avoid any chance of injury to players.



DETAILS OF SHOWER PIPING

PIPING

"All piping in the gymnasium should be in pipe chases. Canvassed asbestos covering is not satisfactory for pipes subject to contact in a gymnasium, as this covering is soon destroyed by rough usage." (10)

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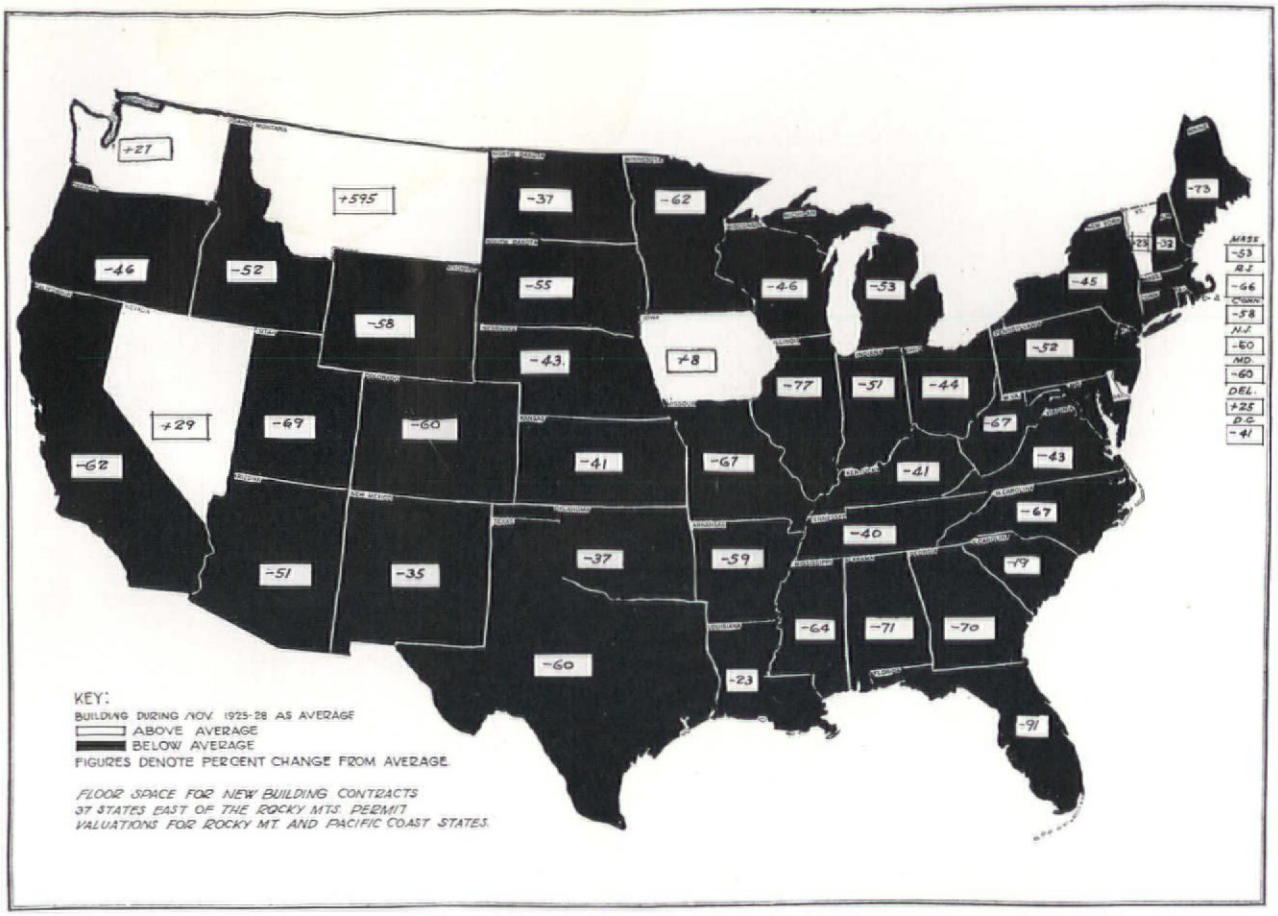
11. January, 1929. 12. March, 1929. 13. September, 1929. 14. October, 1929. 15. November, 1929. *Architectural Record*. Published by the F. W. Dodge Corporation, New York City.

16. *A Study of the Trend in Gymnasium Construction*, by A. R. Winters, Department of Physical Education and Athletics, Hamilton College, Clinton, N. Y.



The November building map revealed somewhat the same spottiness that has characterized earlier months with no important state exhibiting sustained ability to break out of the doldrums. Six states reported larger building volumes than average (November, 1925-1928): Vermont, Delaware, Iowa, Montana, Nevada and Washington.

BUILDING TRENDS AND OUTLOOK

THE INTERRELATIONSHIP OF THE BUILDING AND AUTOMOBILE INDUSTRIES

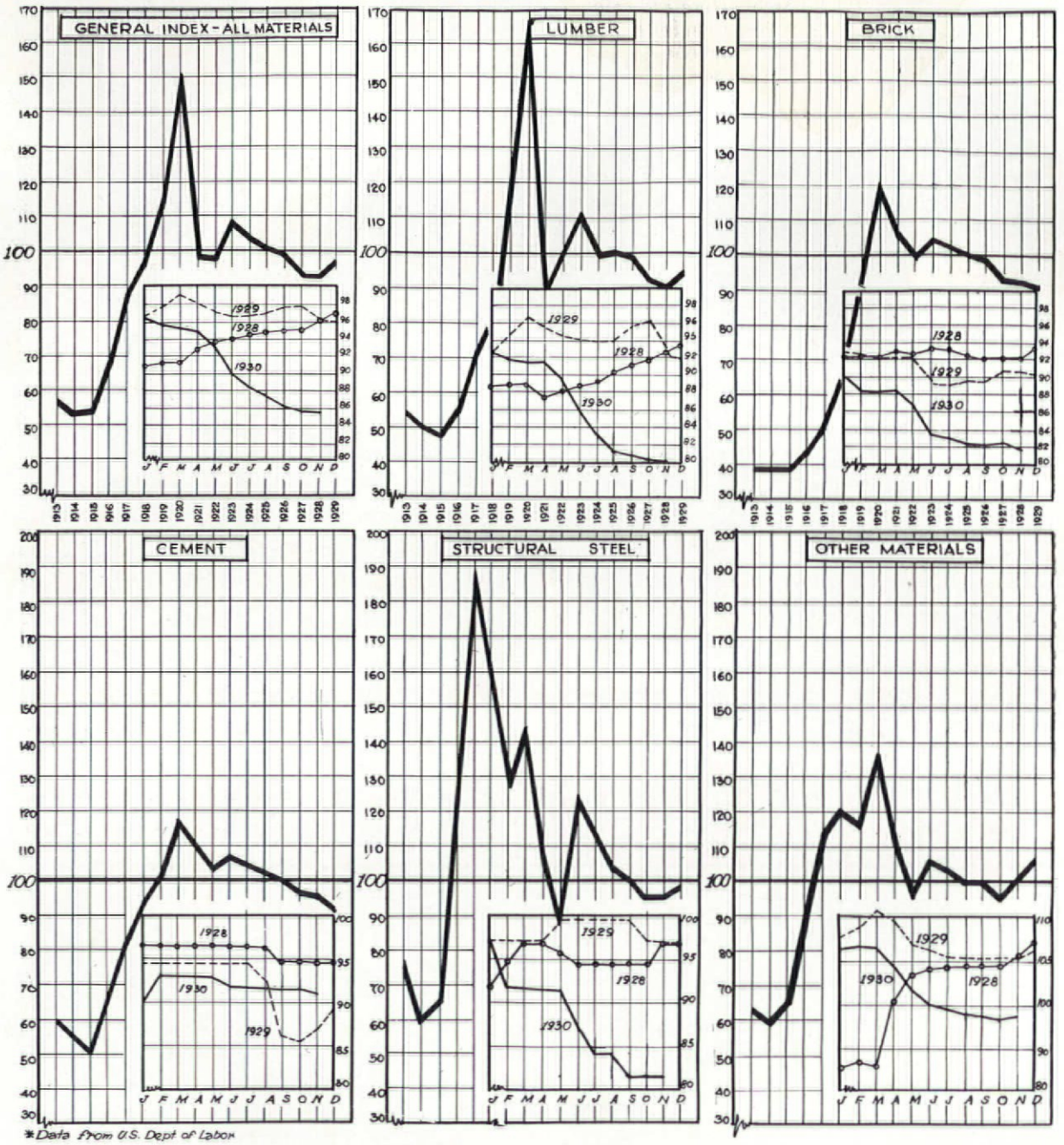
Each new mode of locomotion has strengthened the kinship between transportation and shelter, and the economic interdependence of one upon the other has never been so strong as it is today. Modern transportation numbers many instrumentalities of which the automobile is of large importance. Present-day shelter counts many facilities of which the dwelling is but one manifestation—the store, the office, the factory, the school are others.

Halt building activity in America, and business and industry of the nation is at once bridled. At least one out of every ten employed adults is normally gainfully occupied in construction processes or in the production of building materials and equipment. Stifle the automobile industry with its employment to at least half as many more and our industrial structure becomes undermined. Writing of this interrelationship in the Yearbook of the Construction Industry for 1928, the author stated: "Were the building industry to have sloughed at the time when automobile factories were shut down (in 1927) this condition might conceivably have signalized a depression in business. But the stability in the building industry and the high awards for new construction presaged ensuing activity as large at least as that previously recorded. Large building contracts meant large employment in the building trades and large demand for materials and equipment. Large employment in the building trades meant good markets for clothing, food, shelter, automobiles, radio, electric refrigeration. Good

(Continued on page 92, advertising section)

WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average = 100



*Data from U.S. Dept of Labor

Building material prices, as measured by the general index of the U. S. Department of Labor, were fractionally lower in November than in October and showed an index about 11 per cent lower than in November a year ago. The level of material prices, however, was still above the index of general wholesale prices, which in November had shown a recession from a year ago of almost 15 per cent. Prices for lumber, brick and cement receded from the October levels, while structural steel remained unchanged and the index for other building materials showed a fractional gain. The most drastic decline from last year was recorded in the price of structural steel where the decrease amounted to 16 per cent; the decline in lumber prices was 13 per cent; for brick, almost 10 per cent; and for cement, only 5 per cent. The relatively small decrease in cement prices in the face of larger declines elsewhere was reflective of the demand of road building and other public works construction where cement is the principal material and where activity has been well maintained throughout the year.

ANNOUNCEMENTS

A press notice comes to The Architectural Record from Berlin stating that Hannes Meyer has been called to Soviet Russia as professor in Architecture and chief architect for Giprowtus in charge of design for all the technical schools in U. S. S. R. Herr Meyer was formerly director of the Bauhaus at Dessau.

The Society of Arts and Sciences has awarded its gold medal for architecture to Cass Gilbert "for his outstanding contribution to the skyline of New York in the design of the Woolworth Building." Presentation of the award will be made at a dinner given in honor of Mr. Gilbert at the Hotel Astor, Friday evening, January 16.

The Brooklyn chapter of the American Institute of Architects at the November monthly dinner appropriated $100 to aid unemployed draftsmen through the Architects' Emergency Committee. Many members recommended not only that public works be speeded up by the state and city, but that owners where possible should take advantage of prevailing low costs to improve their properties.

F. A. Harris, architect, announces that he has opened a new office in the Youngerman Building, Suite 301, Des Moines, Iowa, and requests that manufacturers' catalogs be sent to him.

R. N. Le Vee, architect, and W. H. Gmeiner, engineer, have opened architectural offices in Appleton, Wisconsin, and would appreciate receiving manufacturers' catalogs.

Samuel Zouri Moskowitz, architect, requests that manufacturers' literature be sent to him at 51 Riverside Drive, New York City, and also at 63 Hazle Street, Wilkes-Barre, Pa.

Black & Bigelow, Inc., engineers, announce the change of their firm name to A. A. Bigelow & Co., Inc. Mr. Archibald Black has resigned as president of the above firm, but will continue his association in the capacity of consulting engineer.

DODGE PLAN ROOMS

Architects are invited to make use of the plan room service maintained by the F. W. Dodge Corporation at the following addresses:

Birmingham, Ala.	415 Watts Building
Boston, Mass.	77 Sumner Street
Buffalo, N. Y.	315 Jackson Building
Chicago, Ill.	173 West Madison Street
Cincinnati, Ohio	622 Broadway
Dallas, Texas	1314 Wood Street
Detroit, Mich.	607 Shelby Street
New Orleans, La.	1210 New Orleans Bank Building
New York, N. Y.	119 West 40th Street
Philadelphia, Pa.	501 Bessemer Building
St. Louis, Mo.	1008 Chemical Building

It is suggested that in having plans blueprinted, one or more sets may be prepared for a Dodge plan room. This service gives the architect a wider range of subbids and material prices and saves congestion of materialmen and subcontractors calling to figure jobs.

CONTRIBUTORS TO THIS ISSUE

Jock D. Peters and Eleanor LeMaire: associated designers who have done much work in the West, notably the interior of Bullock's Wilshire department store in Los Angeles.

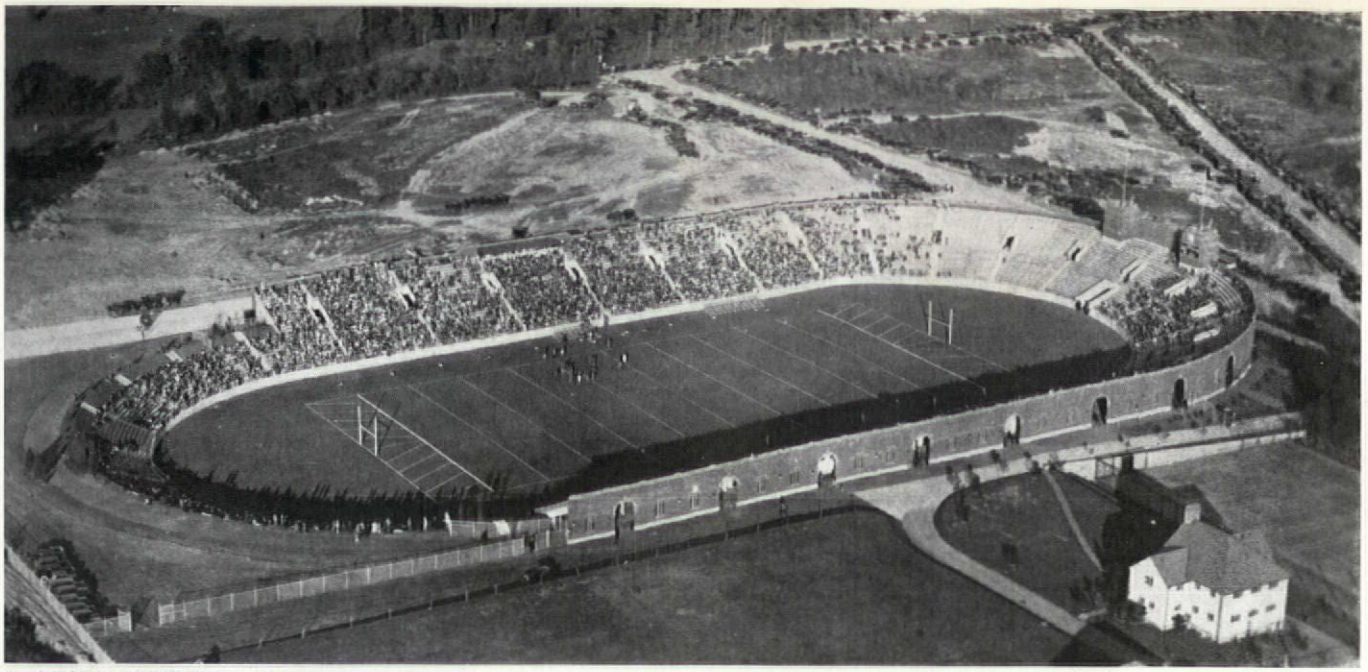
Prentice Duell: an archaeologist engaged at present in Egyptian explorations; he has made many mural paintings of excavated Roman works.

Gavin Hadden: an engineer specializing chiefly in stadium design.

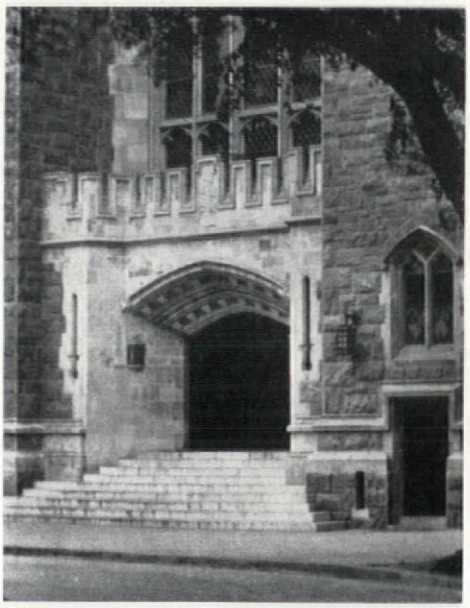
Palmer Shannon: a New York photographer who has specialized in the reproduction of drawings by architects and whose cameragraphs of architectural renderings have been exhibited several times at the Architectural League, New York.

CALENDAR OF EVENTS

Jan.-Feb. 1	International Exhibition of Persian Art, Royal Academy, London.
Jan. 8	Underwater illumination. Demonstration of lighting of swimming pools. Illuminating Engineering Society. New York Athletic Club.
Jan. 12-16	American Road Builders' Association Convention and Road Show, St. Louis, Mo.
Jan. 13-16	Building Products and Equipment Exposition, Cleveland Public Auditorium.
Jan. 15	Nominations for Le Brun Traveling Scholarship should be received before this date by the committee, Room 530, 101 Park Avenue, New York City.
Jan. 15-30	Exhibition of cameragraphs by Palmer Shannon, photographer, at the Architectural League, 115 East 40th Street, New York City. Exhibits will include reproductions of architectural drawings and will show the work of New York renderers for the past year.
Jan. 16	Medal award dinner given in honor of Mr. Cass Gilbert at Hotel Astor, New York City, by Society of Arts and Sciences.
Jan. 23.	Beaux-Arts Annual Ball, Hotel Astor.
Jan. 24	Closing date for applications to the Steedman Memorial Traveling Fellowship, Washington University, St. Louis, Mo.
Feb. 1	Closing date for entries for Rome Prize competition. Apply to Roscoe Guernsey, executive secretary, American Academy in Rome, 101 Park Avenue, New York City.
Through Feb.	Annual exhibition of the Architectural League of Greater Miami, Florida.
March 30-April 4	House and Garden Exposition, Grand Central Palace, New York City.
April	Second International Congress and Exhibition of Sanitary Engineering and Municipal Hygiene, Milan, Italy. For information, apply to the Secretary General, Congress Internazionale di Tecnica Sanitaria e di Igiene Urbanistica, Milano, Piazza del Duomo 17.
April 18-25	Fourth Biennial Architectural and Allied Arts Exposition, Grand Central Palace, New York City.
June 1-5	International Town Planning and Housing Federation Congress, Berlin.



C. *Aerial Photographic Service*



Trowbridge

THE FEBRUARY ISSUE

●

STADIUM DESIGN
BY MYRON W. SERBY, STADIUM CONSULTANT

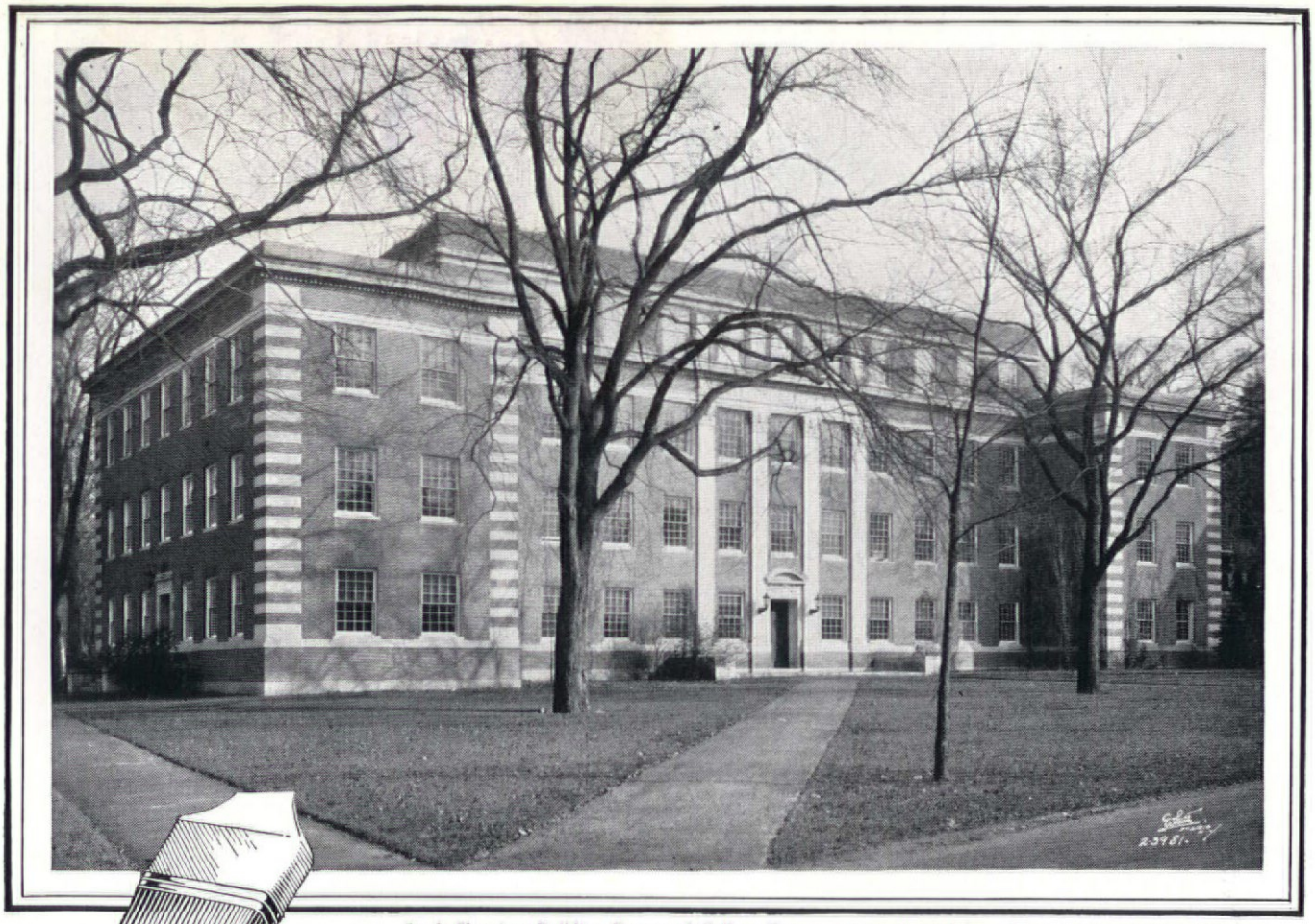
The many stadiums and grandstands erected to meet the increasing desire of the public for outdoor sports have witnessed the development of stadium design into a specialized practice. Features such as combination usage of the playing field for various games, orientation, drainage, construction of the stands and seats, nearness and clearance factors of good view, multiple decks for spectators and parked automobiles will be discussed in this article. Excellent photographs of recent projects will also be included.

WASHINGTON HALL, WEST POINT MILITARY ACADEMY
GEHRON AND ROSS, ARCHITECTS

As a mess hall seating hundreds of cadets this building is a recent addition to the West Point reservation. The hall is fitted to an irregular plot of ground and is itself a single vast room with two wings flanking a central kitchen and two serving pantries. The traditional Gothic style has been used to conform with the other buildings and barracks of the academy.

PUNCH AND JUDY THEATRE, CHICAGO
EUGENE FUHRER, ARCHITECT

This small cinema theatre is a remodeling of an older playhouse, the Central Theatre Auditorium, long a home of light opera and musical productions. Many changes have been wrought for the presentation of motion pictures. One of the two balconies has been eliminated and the other converted into loges. Obstructing columns of the old theatre have been concealed by the new construction, and the general plan rearranged to obtain greater compactness and better acoustical qualities. Interior decorations were designed by Nicolas Remisoff.



Steele Chemistry Building, Dartmouth College, Hanover, N. H. Painted throughout with Barreled Sunlight

In one of Dartmouth's *Finest Buildings*

INTERIOR painted surfaces are conspicuously good looking, with a pronounced lustre, a rich depth . . . corridors, classrooms, laboratories are suffused with a soft, agreeable working light . . . walls and ceilings are immaculately clean . . . Dartmouth's Steele Chemistry Building is painted throughout with Barreled Sunlight.

Are you concerned with interior painting? Let us tell you more about Barreled Sunlight. Let us send you the facts on its long-lasting whiteness and cleanliness . . . its washability . . . its ease of tinting . . . its durability and low maintenance cost. Mail the coupon.

U. S. Gutta Percha Paint Co., A-22 Dudley Street, Providence, R. I. Branches: New York, Chicago, San Francisco. Distributors in all principal cities.

Barreled Sunlight
Reg. U. S. Pat. Off.

Easy to Tint

An all-oil product, Barreled Sunlight is readily tinted any desired shade with ordinary colors in oil. Quantities of 5 gallons or over are tinted to order at the factory without extra charge.

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Please send us your descriptive booklet and a panel painted with Barreled Sunlight. We are interested in the finish checked here.

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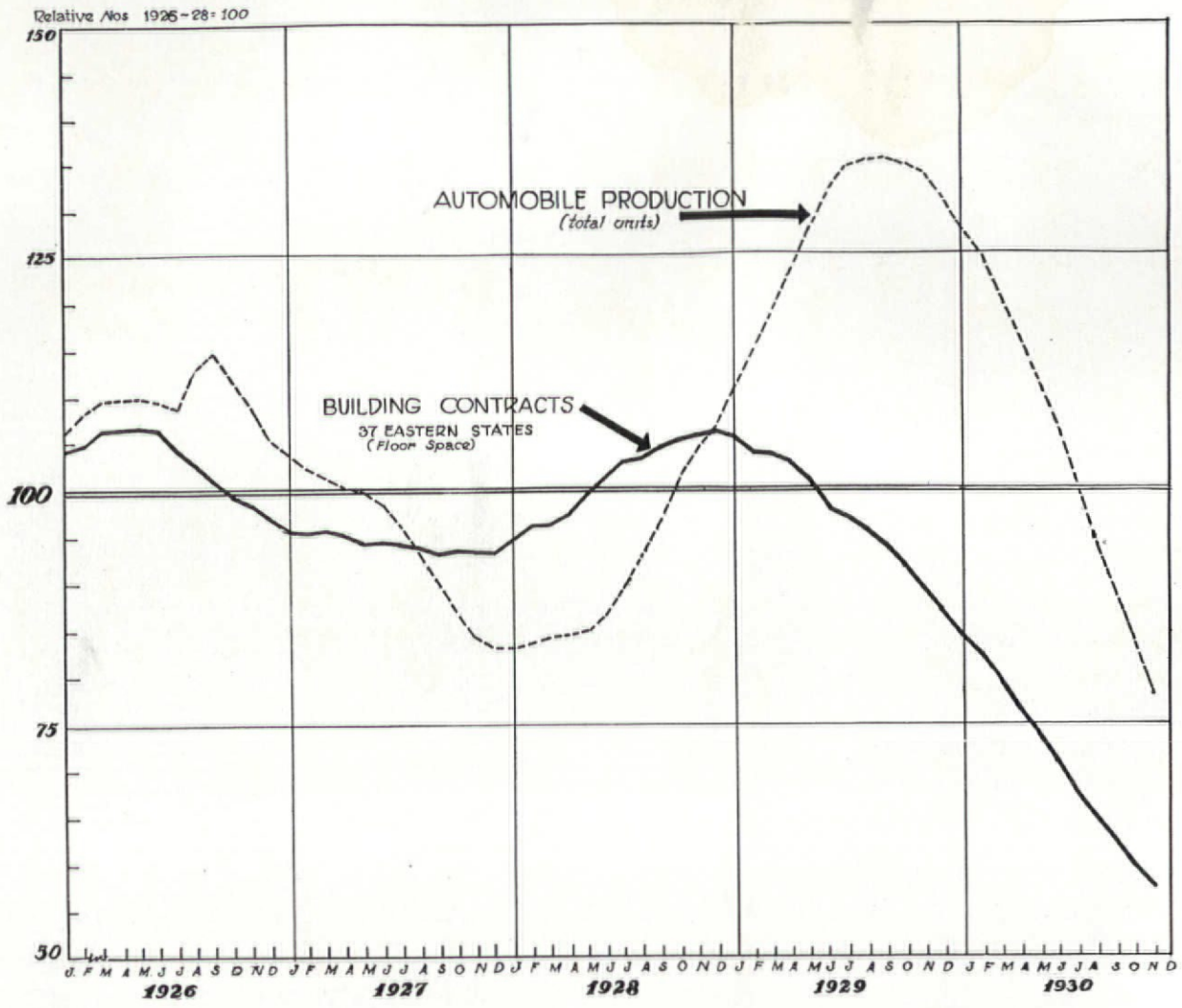
TREND OF BUILDING IN 37 EASTERN STATES

A comparison between the trend of building contracts and the trend of automobile production.



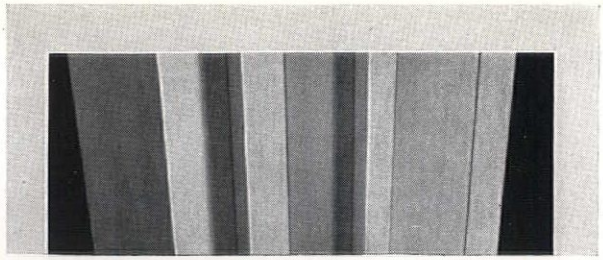
The prosperity of the decade which ended with the year 1929, was very definitely identified with the progress in two industries, building and automobiles. Just so long as the trend in both had been upward general business and industry were on the incline; when the trend of both was downward, a decline in business was foreshadowed. Major changes in the trend of building have preceded similar movements in automobile production.

The present decline in contracts awarded for new building, which was first evidenced in January, 1929, was a preliminary indicator of the impending major depression which is with us today. This indication was partially confirmed in August, 1929, and more definitely confirmed in September and October by the reversal in the trend of automobile output.

Going back to the year 1926 the trend in building awards disclosed at midyear a preliminary indication of decline. This was confirmed by a declining trend in automobile output in October of the same year.

For building the downward trend of contracts has now lasted two full years. For automobile production the decline has been unbroken for fifteen months. In the face of this it is not unlikely that the downward trend in automobile output will carry through for most of the months of 1931 if the lag between the building cycle and the automobile cycle manifested in 1926 and 1927 may be taken as a guide.

On the whole the year 1931, it now appears, will show new building volume not far different from that of the year 1930. Neither is it likely that automobile output, if manufacturers are as mindful of conditions of demand as now seems apparent, will show any material change for the entire year 1931 from the year that has just closed.



Sill and jambs lock tight with this new frame . . stop air and water leaks!

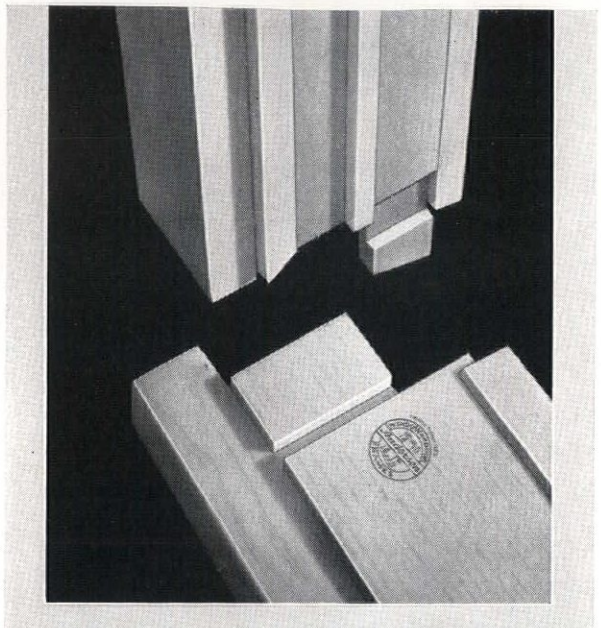
Newest Andersen patents give architect weathertight installation

FOR THE MODERN HOME or building, architects are turning to window and door frames of genuine white pine . . . made by Andersen . . . and now equipped with the new locked sill-joint, 3″ per foot sill slope, wide blind stop and other exclusive features. Notice how sill and jambs lock in place . . . accurate, rigid and leakproof.

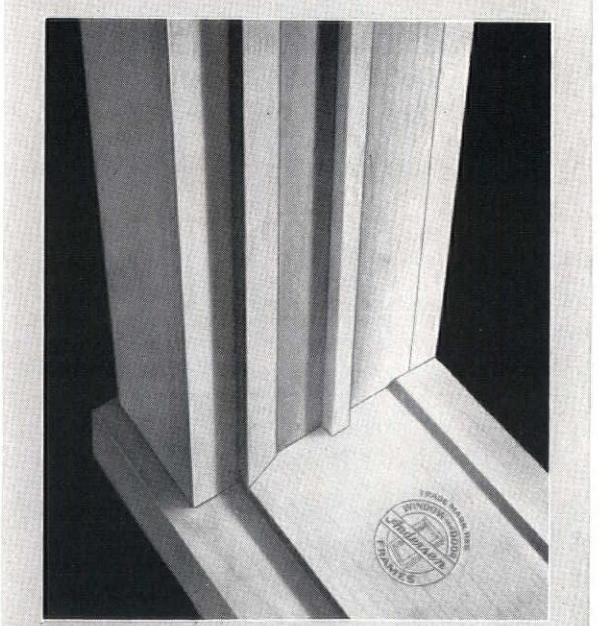
In Andersen's new Master Frame, the architect finds a high standard of accuracy, plus the patented details which insure a permanent, weathertight installation. Each frame is equipped with Andersen patented noiseless pulleys—guaranteed for a lifetime of noiseless, trouble-free operation.

Also, these new models, made to fit every architectural need, have a beauty never before attained in wooden frames.

Andersen Frame Corporation, Bayport, Minnesota . . . represented by 4,000 leading jobbers and dealers.



Photograph showing sill and jamb dadoes before joint is closed.



Click! Sill and jamb lock together—rigid, leakproof.

Andersen MASTER Frames

TRADE MARK REG. WINDOW and DOOR Andersen FRAMES

See the 1931 Sweet's, B 2273 to 2292

(*Continued from page 91, editorial section*)

markets for these products meant large production schedules in the factories producing them. The relationship, direct and indirect, is almost infinite."

Together the automobile and building industries reflect two of the most important items in the balance sheet of business. Any basic change in the trend in either has a marked effect upon industrial and commercial equilibrium; any change in both has an effect on general business so potent as to more than offset the combined effect of many opposing movements of lesser importance in other sections of our economic scheme.

The building and automobile industries alone have accounted in recent years for about 35% of the entire domestic consumption of steel. Lumber, copper, lead, rubber, cement, in greater or less degree, depend heavily upon the health of the building or automobile industries or both, to say nothing of artificial leather, lacquers, paints and the thousand and one other commodities which, when assembled, become the dwelling, the theater, the sedan, the truck. The utilization of basic materials by each of the two industries is not materially dissimilar, except as to formulas for their compounding. Cement and rubber are the only important exceptions and they are predominantly materials for one or the other.

The present decline in contracts awarded for new building, which was first evidenced in January, 1929, was a preliminary indicator of the impending major depression which is with us today. This indication was partially confirmed in August, 1929, and more definitely confirmed in September and October by the reversal in the trend of automobile output. What has happened since in the building and automobile industries and general business itself is now commonplace.

Going back to the year 1926 the trend in building awards disclosed at midyear a preliminary indication of decline. This was confirmed by a declining trend in automobile output in October of the same year. It will be recalled that general business during the closing months of 1926 was taking a breathing spell only to decline during the ensuing year which has since been recorded as one of mild depression. That business could have been seriously upset by the decision of one large automobile manufacturer to shut his plants for the change of models during 1927 is evidence not only of the importance of the automobile industry to economic well-being but even of the fineness of adjustment that exists between the many economic mechanisms that are as so many parts requiring proper lubrication.

For building the downward trend of contracts has now lasted two full years. For automobile production the decline has been unbroken for fifteen months. In the face of this it is not unlikely that the downward trend in automobile output will carry through for most of the months of 1931 if the lag between the building cycle and the automobile cycle manifested in 1926 and 1927 may be taken as a guide.

On the e th ar 1931, it now appears, will show ne 'ding olume not far different from that of 1930 Neither is it likely that automobile , if n ufacturers are as mindful of cc dit of dema s now seems apparent, will show a material c nge for the entire year 1931 from the year that na just closed.

The inventory position as respects the ultimate market is still pretty much the same for both building and automobiles. Markets for new building and automobiles are still dependent upon conditions of consumer demand and supply. Investors in building enterprises, whether it be dwellings, apartments, theaters or office buildings, are still overstocked to some extent. Defaults in interest payments on first mortgages are large. The consumer of automobiles is likewise somewhat overstocked in the light of present disturbed economic conditions. The old car may have to do some further double duty, excepting in cases of absolute replacement necessity and the well-to-do owners who have habitually traded their cars from year to year.

This brings us to a further analysis of the probable effect of curtailed automotive output upon new building. In 1930 the construction of garages, automobile factories, and the larger service stations approximated $100,000,000 for the entire country; it is probable in the light of a sluggish year for automobiles that a very substantial decrease from this figure will be registered in 1931. Thus the interdependence between the two industries becomes at once apparent.

The automobile brought with it a demand for new and ever better roads and highways; new building activity provided large employment to building artisans at high wage levels; incomes thus derived were used in the purchases of automobiles, among other comforts and necessities, dwellings, furnishings and the like. Good roads, automobiles, large incomes made possible real estate subdivisions and housing developments in our suburban areas.

Since it appears that in the field of new residential building the trend is in the direction of larger apartment houses in urban centers—though the single dwelling still is an important factor in housing—the elevator may become in effect a more important competitor of the automobile—a case of vertical transportation against horizontal locomotion. This development when it comes will bring a new freedom in architectural design, a fuller appreciation of the economics of materials and construction, and a closer approach to functional requirements of buildings.

It is indeed a far cry from the Phoenician sloop to the automobile, but each mode of transportation within extremes so far apart has brought measurable changes in our living habits. If the airplane or dirigible will become as commonplace as the automobile our offices, stores, dwellings will be quick to mirror the new order and our cities will take on skylines far different from those we know today.

L. Seth Schnitman

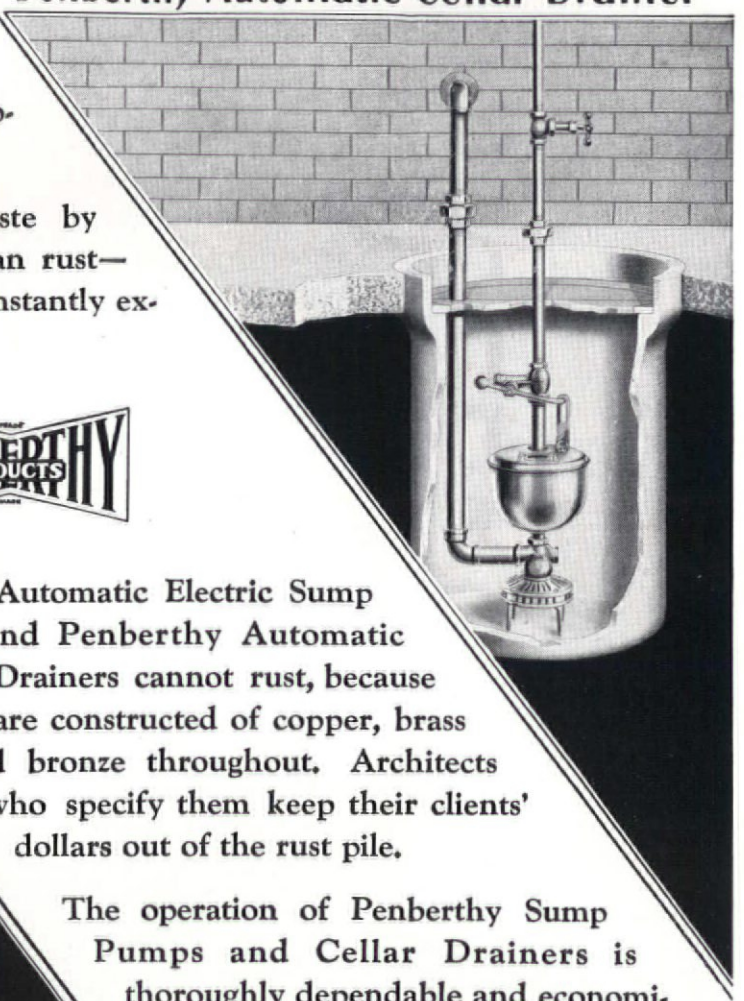
A $600,000,000 Waste!

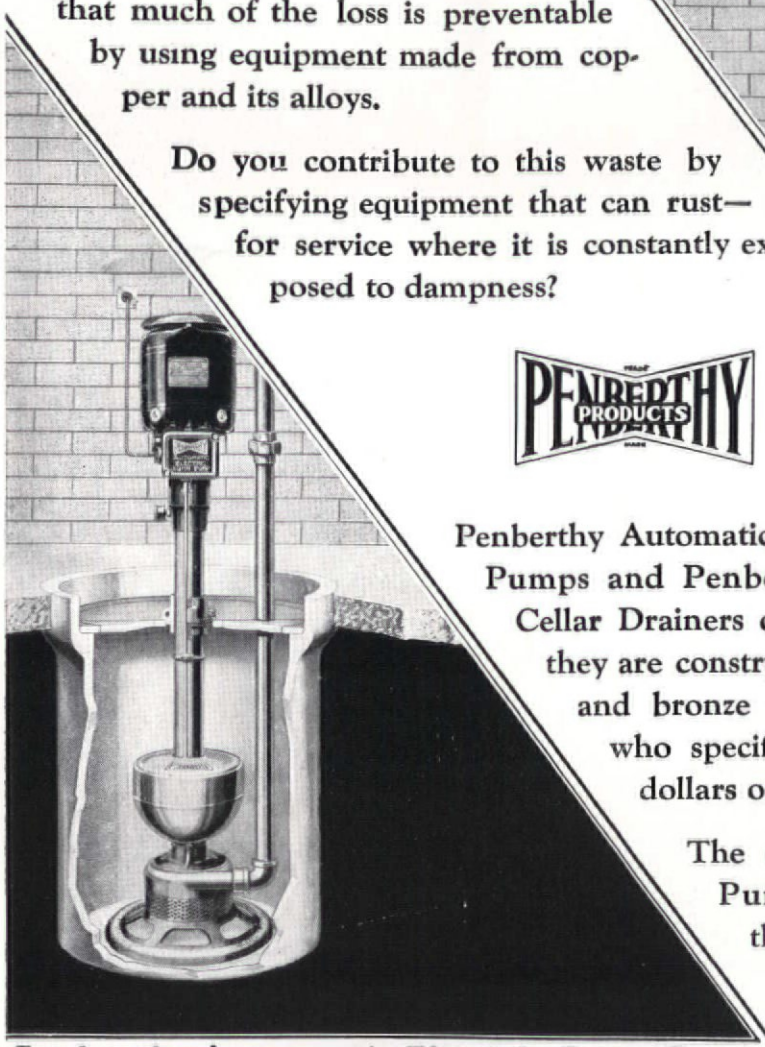
Are you responsible for a part of it?

The annual loss in the United States due to rust is estimated at $600,000,000. This figure is appalling—particularly when you realize that much of the loss is preventable by using equipment made from copper and its alloys.

Do you contribute to this waste by specifying equipment that can rust—for service where it is constantly exposed to dampness?

Penberthy Automatic Cellar Drainer





Penberthy Automatic Electric Sump Pump

PENBERTHY PRODUCTS

Penberthy Automatic Electric Sump Pumps and Penberthy Automatic Cellar Drainers cannot rust, because they are constructed of copper, brass and bronze throughout. Architects who specify them keep their clients' dollars out of the rust pile.

The operation of Penberthy Sump Pumps and Cellar Drainers is thoroughly dependable and economical. There is a size and type for every drainage requirement.

These Penberthy Pumps are quickly available—they are carried in stock by the leading jobbers throughout the country.

PENBERTHY INJECTOR COMPANY

ESTABLISHED IN 1886

DETROIT

CANADIAN PLANT WINDSOR, ONT.

NOTES IN BRIEF

A LETTER:

FAMOUS ARCHITECTS

THE EDITOR:

The letter* from Professor Joseph Hudnut to President Ricketts of Rensselaer Polytechnic, naming a list of the ten best architects of the United States, has in it an idea of much interest, one sure to provoke much discussion and no decisions—for concerning tastes there is no disputing. But I note with mingled feelings of awe and sadness the list suggested. I am properly impressed by the didactic finality of the professional utterance, but gaze on the list with grief. It is exactly what the teachers, most of them, would have us believe; but bless them, we have our own secret reservations. I note even that a necessary concomitant to being placed on the list is a state of death—maybe it should be phrased "suspended animation." Much could be said on this matter alone, but it seems to me at best a list definitely dated *fin de siecle*—to subscribe in which one must have died mentally in '99.

Let us go back to '99 if you wish. The Brochure Series came out in that year with new and modern ten best buildings, selected by the then architects, preening itself on the improved standard shown over a previous list of 1885. The list of the buildings and their authors is not of special interest but their definition of the mark of genius is—and can be just as well applied today—that "each of the buildings represents a conception clearly thought out, simply and forcibly expressed and treated with monumental dignity irrespective of decoration."

To my mind such a definition taboos office organizers—such as Burnham and his modern parallels like Albert Kahn, than whose office few can do better—it should also shunt out of the single track mind anyone who is not primarily a designer.

We must not put on our list younger men no matter how good—Grant Simon and Harry Sternfeld of Philadelphia, Burnham Hoyt of Denver, young Root and Holabird of Chicago, David Adler also of Chicago, and innumerable others: for theirs is still to do. We must keep out all house designers and small town men—those flowers doomed to waste their sweetness on the desert sticks; for of their works who is familiar enough to praise?

So here is a list, properly nominated for this "Hall of Fame"—by their good works will they be known. First the ancients—

McKim: concerning whom naught can be said but praise.

H. H. Richardson: an early master of the late Victorian period; a master in design, he helped formulate the American program.

(*Continued on page 96*)

* In the October, 1930, issue of The Record, page 98 (adv.).

STOCK EXCHANGE ROOM—CHICAGO BOARD OF TRADE—HOLABIRD & ROOT, Architects

UTILITY AND HARMONY COMBINED

in an artistic and distinctive lighting arrangement designed and made by PEARLMAN

Victor S. Pearlman & Company

DESIGNERS AND MAKERS OF

DISTINCTIVE LIGHTING FIXTURES

533 South Wabash Avenue · CHICAGO

VENTO

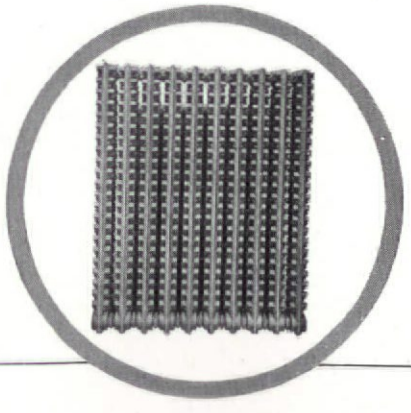
CAST IRON HEATERS

for BLOOMINGDALE'S

BLOOMINGDALE'S DEPARTMENT STORE

Architects—Starrett & Van Vleck
Consulting Engineer—E. E. Ashley
Blower Equipment—Buffalo Forge Co.
Heating Contractors—Almirall & Co., Inc.

- More than 20,000 square feet of Vento Cast Iron Heaters were installed in this large department store in New York City.
- Bloomingdale's not only secured heaters that will operate efficiently but will actually last as long as the building itself.
- We will be glad to send detailed information on Vento.



AMERICAN RADIATOR COMPANY

DIVISION OF

AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

816 So. Michigan Avenue, Chicago 40 West 40th Street, New York City

"This is the Apartment to Take . . .

—Look at the wall plugs for radio!"

Good radio reception has become one of the most important factors in selecting an apartment.

IN hundreds of the better apartment buildings, the architect has had the foresight to include the new RCA Centralized Radio system in his plans.

In place of the unsightly maze of wires on the roof, is an inconspicuous single wire antenna. All the down wires are hidden in the walls. The wall plugs in each suite are as simple as those for a floor lamp.

This system can be installed in buildings of any size regardless of the number of apartments. Approved by the National Board of Fire Underwriters.

RCA Centralized Radio Equipment, operated from a central control, is also designed for hotels, hospitals, sanitariums, schools, passenger ships, etc.

Without obligation, we will gladly answer inquiries and prepare plans and estimates for installations of any size.

Any tenant may plug in his set immediately upon moving in, and tune his radio as independently as though he had his own antenna . ith infinitely better radioreception.

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RCA CENTRALIZED RADIO

Sullivan: who to his honor fought a single-handed battle; ridiculed in his day, his architecture is now seen fraught with a strange beauty based on solid precepts.

Stanford White: whose work touched genius; who while working in a single style inspiringly modified it by his splendid feeling for the beautiful.

And the later men, some of whom still live to do more and better work—

Paul Cret: designer of the Pan-American Union, Detroit Art Museum, Rodin Gallery and other masterpieces; master-designer, master-teacher, whose genius has fired innumerable pupils; a modern in spirit yet in full touch with inspiration of earlier generations.

Milton Medary: past president of the A.I.A.; designer of Valley Forge Chapel, Bok Tower and other great works; who combined the genius of the designer with an infinite capacity for taking pains.

Frank Lloyd Wright: designer of the Imperial Hotel at Tokyo, Canberra in Australia; a thinker of first water, more honored abroad than at home; his architecture is sincere and truly his own.

Claude Bragdon of Rochester: delver into the mysteries of projective ornament, designer of stage settings for the "Miracle" and other romantic works; inspirer of creative endeavor.

Edgarton Swartwout: designer of the Elks Memorial, Missouri State Capitol; a man who single-handed and with no office organization carried out great buildings; truly answering the requirements that the architect be entirely responsible for works bearing his name.

Eliel Saarinen: now living in this country; a man of original thought and great force whose work sanely illustrates the imaginative conceptions of his generation.

And as substitutes on this line-up, we have waiting on the bench a list which cannot be all-inclusive—fit men like Goodhue, Mulgardt of San Francisco, Cram of Boston, Hood of New York, Delano or Aldrich (I don't know which, maybe both) John Russell Pope, Hirons, Platt, Aymar Embury who built a whole town at Southern Pines: all designers of the works credited to them. Maybe there are some more keystones on which their names could be inscribed.

I would make a final suggestion—that if the scheme is adopted let the Regents provide in the main hall suitable niches wherein the works of these men are shown: the drawings made by themselves, the photographs by Sigurd Fischer; so that not only by their names will they be known, but also by their labor. Then truly will their genius greatly inspire the rising youth; then will creative endeavor be marked with a white stone; then will their names be praised for works accomplished.

Yours very truly,

Frederick A. Muhlenberg, A.I.A.

NEWS

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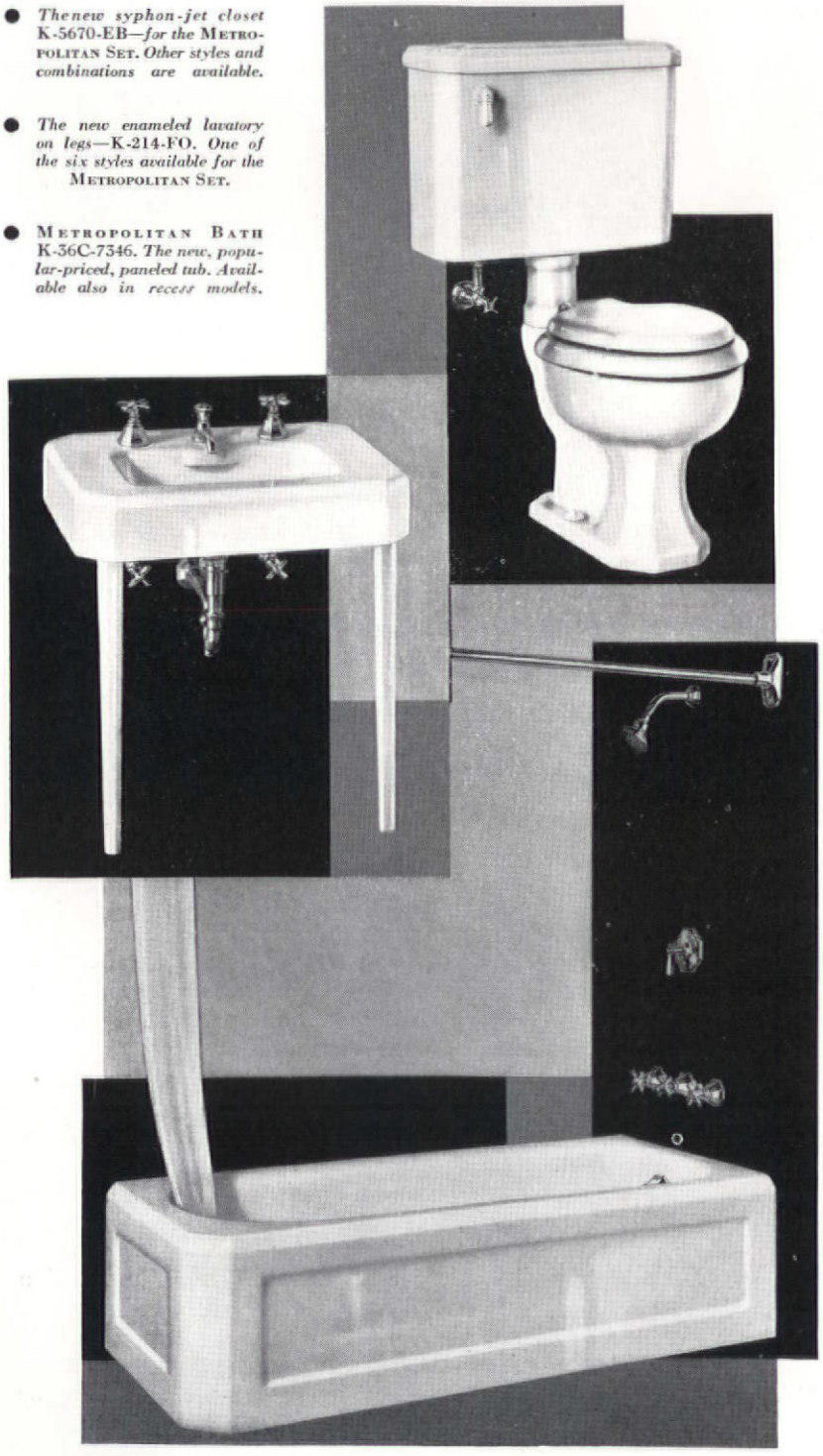

IF YOU'VE had your eye on plumbing trends, you've watched the demand for matched fixtures gather speed. Bathrooms, important as they are, have been getting brighter, more important all the time. And lately, home-hunters and home-owners, keen about the decorative effect, have been asking for lavatories, baths, and closets *that go together.*

Now, for the first time in plumbing history, a manufacturer is deliberately merchandising these related fixtures and fittings — at popular prices! Knowing your bathroom, knowing the architectural treatment of the house, you simply choose the Kohler set which best suits. Easy as one-and-two! And from the smooth shining glaze of the enamel or vitreous china, to the distinguished fittings, *every* fixture in that set agrees perfectly in design, style, quality, and color with the others!

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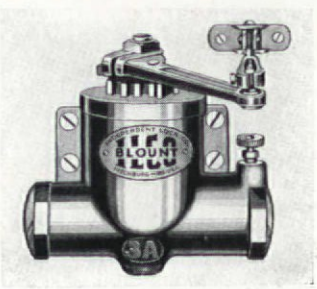


ARCHITECTURAL AND ALLIED ARTS EXPOSITION

A more comprehensive idea of the evolution and development of works of art than is ordinarily presented at exhibitions of architecture and its kindred arts will be shown in the crafts and other exhibits at the Architectural and Allied Arts Exposition at the Grand Central Palace next April. At the forthcoming exposition efforts will be made to plan exhibits so that the public will see recorded the development of an individual piece of art from the initial sketch until its final stage as a finished work and also to trace the history of the industry as a whole by means of pictures and old and modern examples of craftsmanship.

Recognition of the relationship between architecture and its sister arts of painting and sculpture to the crafts has gained considerable momentum since the craftsmen of the decorative arts were first invited to participate in the annual exhibits of the Architectural League of New York under the presidency of Grosvenor Atterbury a few years ago. By exhibiting the decorative arts alongside the fine arts, the League has given expression to the alliance of all the arts as exemplified in its governing personnel. The organization provides that its president and four vice-presidents shall be, respectively, an architect, a mural painter, a sculptor, a landscape architect and a craftsman.

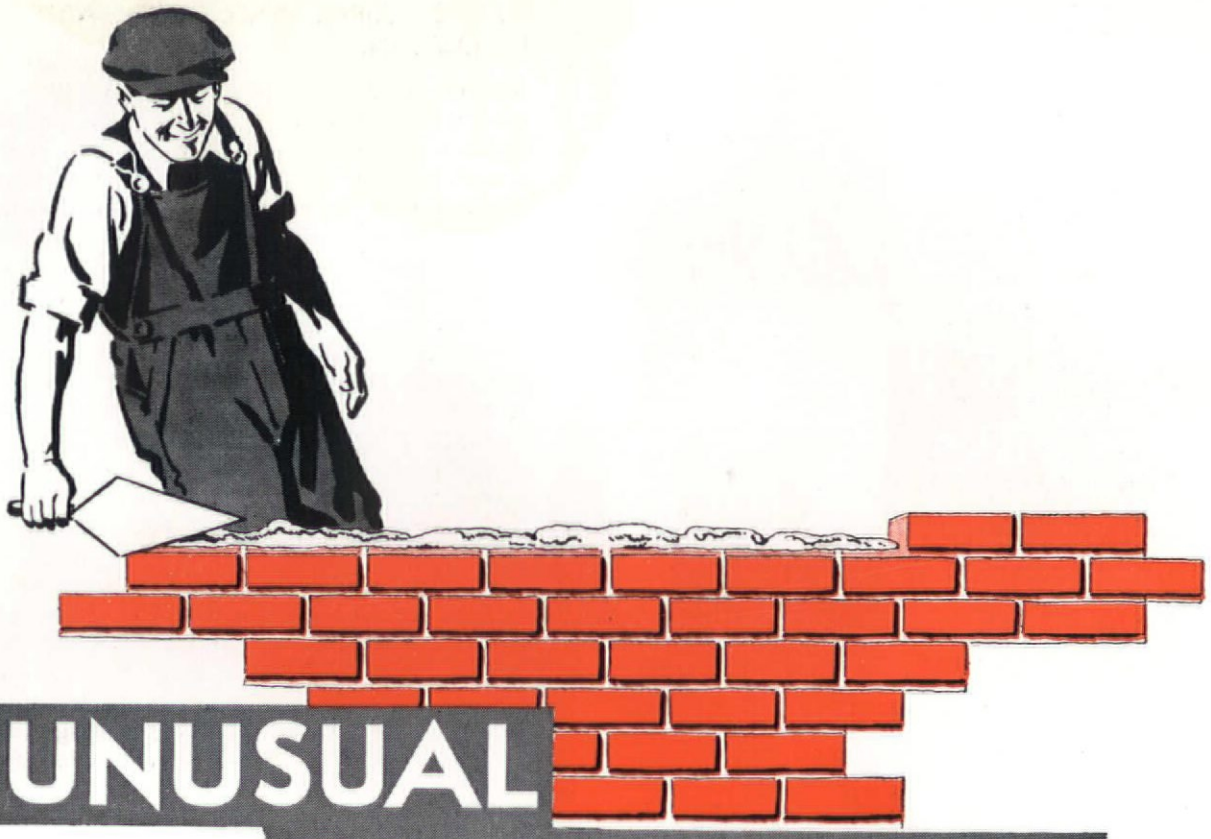
The crafts will constitute a significant part of the big exposition to be held in April under the auspices of both the Architectural League of New York and the American Institute of Architects. It is the fourth biennial event of its kind, in each of which the decorative arts have occupied positions of importance with comprehensive exhibits in metal, glass, ceramics, textiles and other materials.

THE JAMES HARRISON STEEDMAN MEMORIAL FELLOWSHIP IN ARCHITECTURE

The Governing Committee of the James Steedman Memorial Fellowship in Architecture announces the sixth competition for this fellowship.

This fellowship represents an award of $1,500 for foreign travel. The competition is open on equal terms to all graduates in architecture of recognized architectural schools of the United States. Such candidates must be American citizens of good moral character, and shall have had at least one year of practical work in the office of an architect practicing in St. Louis, Mo., before being entitled to assume the benefits of the fellowship. All candidates shall be between twenty-one and thirty-one years of age at the time of appointment.

Application blanks for registration can be obtained at any time upon written request addressed to the head of the School of Architecture of Washington University, St. Louis, Mo., to whom application blanks properly filled out must be returned not later than January 24. Any requests for supplementary information relative to the rules and regulations governing the competition shall be made at the same time.



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F. J. and W. A. Kidd were the Architects, Thomas H. McKaig the Engineer, and John W. Cowper Company, Inc., the General Contractor.

For complete information about Hunt inspection, tests and supervision for buildings and structures see Sweet's Architectural Catalogues A-119 or write us.

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LE BRUN TRAVELING SCHOLARSHIP COMPETITION

The Executive Committee of the New York Chapter of the American Institute of Architects announces a competition for the selection of a beneficiary for the traveling scholarship founded by Pierre L. Le Brun. The program will be issued about January 15, calling for drawings to be delivered about March 15.

The award is $1,400 to be used in paying the expenses of an European trip lasting not less than six months. The conditions state that "any architect or architectural draftsman, a citizen and resident of the United States, not under twenty-three or over thirty years of age, who shall, for at least three years, have been either engaged in active practice, or employed as an architectural draftsman and who is not and has not been the beneficiary of any other travelling scholarship, shall be eligible to compete."

All those wishing to enter the competition should arrange at once for nomination by a member of the American Institute of Architects. Nomination blanks can be obtained from the secretary of any chapter, A. I. A., or from the LeBrun Scholarship Committee. Nominations should be sent, so as to be received before January 15, 1931, to LeBrun Scholarship Committee, Room 530, 101 Park Avenue, New York City.

BOOK REVIEWS

AMERICAN THEATRES OF TODAY, Vol. II. R. W. Sexton. *Architectural Book Publishing Co.*, N. Y., 1930. $13.50.

This is a continuation of Sexton's earlier volume on American Theatres. Additional layout data are offered and also worthwhile information on acoustics, heating and ventilating. The illustrations are representative of the current theatre which is neither modern nor traditional. Theatre architects have produced a type, generally redundant with decoration, both outside and within. Our theatres are fairly well planned. The charts, plans and sections make the book of value to architects concerned in theatre design.

SWEET'S ARCHITECTURAL CATALOGS, 1931 Edition. *F. W. Dodge Corp.*, N. Y.

Sweet's in its new edition totals over six thousand pages of information on building materials, equipment and specification data. The value of this publication has been multiplied because of its greater completeness, due to the inclusion of entire catalogs of manufacturers. The appearance of the catalogs has been freshened by new covers in green and yellow. A summary of the main subjects covered by Sweet's is listed on the back to save time for draftsmen and architects.

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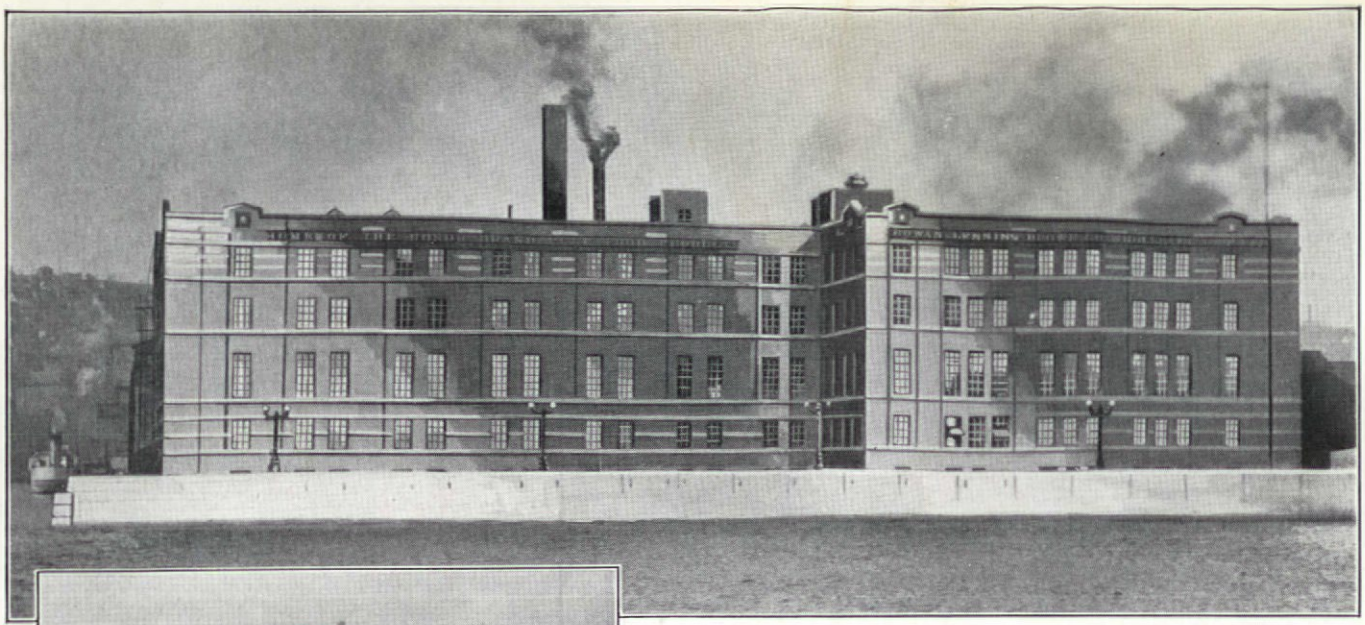

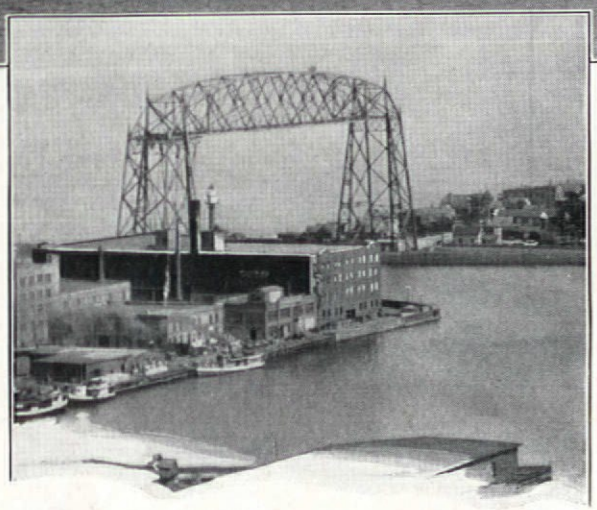

The Gowan-Lenning-Brown Wholesale Warehouse, Duluth, Minnesota. F. G. German, Architect. Lief Jensson, Asst. Architect. W. J. Zitterell, Contractor.

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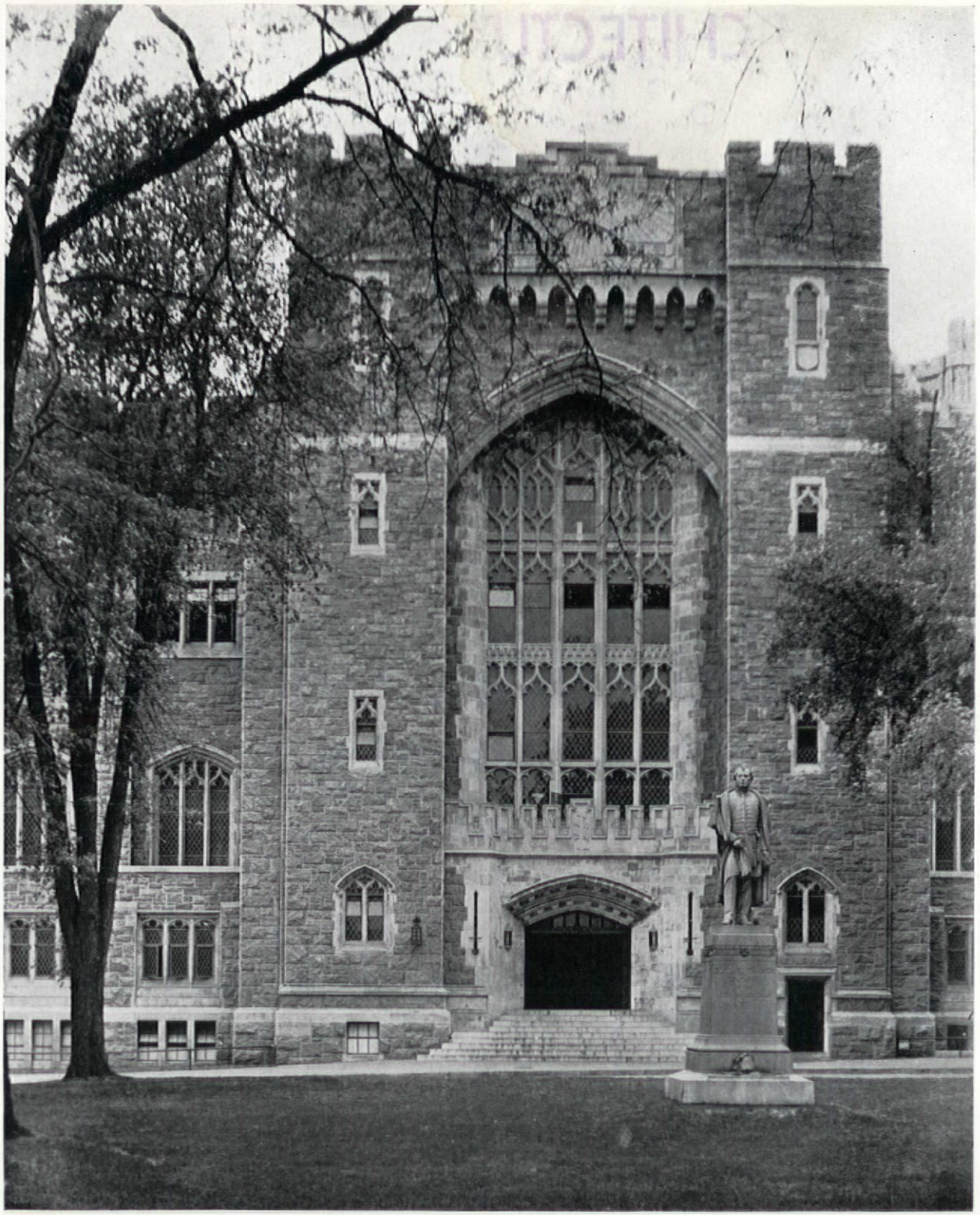

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WASHINGTON HALL, UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK
GEHRON AND ROSS, ARCHITECTS

THE ARCHITECTURAL RECORD

AN ILLUSTRATED
MONTHLY MAGAZINE
OF ARCHITECTURE

VOLUME 69 NUMBER 2 FEBRUARY, 1931

THE NEW MESS HALL AT WEST POINT

GEHRON AND ROSS, ARCHITECTS

By Parker Morse Hooper

The problem of designing a single mess hall sufficiently large to feed the entire corps of cadets at one sitting was complicated considerably by the peculiar shape of the plot of ground available for the carrying out of this project. As the site is a lot at the corner of two avenues on the south side of the parade ground it was necessary to design the building in the shape of the letter "V".

THE PROBLEM

It was necessary to design a building containing a dining room of sufficient size to seat 1,600 cadets at one time and allow for a future increase of at least 400 cadets. Also the building had to be so designed and constructed as to provide space on two upper floors for what is known as the drawing academy or department of mechanical drawing, and for dormitory quarters for employees of the building.

CONSTRUCTION AND COST

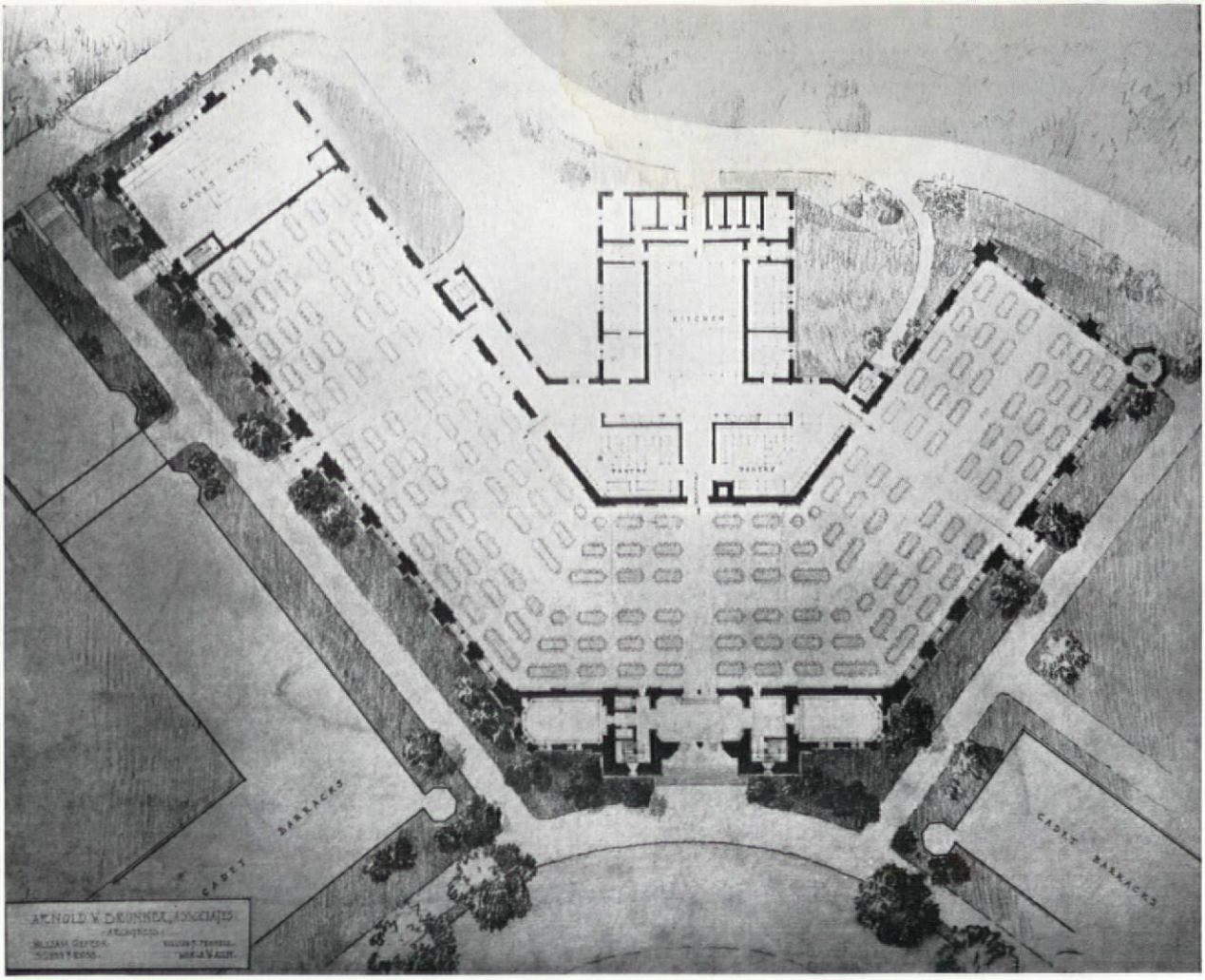
The West Point Military Post built the new mess hall by the method of purchase and hire. To Col. E. J. Timberlake, Q.M.C., constructing quartermaster, and William Goding, superintendent of construction, belong the credit for the successful carrying out of this great project. The building, fireproof throughout, has a steel skeleton frame, non-bearing masonry walls and reinforced concrete floors. The roof, supported on steel rafters, is covered with slate. The building which has five stories and a basement, occupies approximately 51,000 square feet and cost the United States Government approximately $3,000,000. The exterior walls are built of rock-faced variegated gneiss, quarried and dressed on the military reservation, and are trimmed with Indiana limestone.

DESIGN

The design of this new cadet mess hall, officially designated as Washington Hall and the largest single building at West Point, is similar in style to the other recently erected buildings. When Cram, Goodhue and Ferguson made their designs for the new West Point twenty-five years ago, they took as the inspiration for the architecture of the new buildings a simplification of the English collegiate Gothic style. In the design of this new hall, Gehron and Ross, the architects, have adapted in a pleasing and successful manner the architectural style so splendidly exemplified in the cadet chapel and the great riding hall.

ARRANGEMENT

The main feature of the building is the cadet dining hall which occupies the entire



WASHINGTON HALL, UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK
GEHRON AND ROSS, ARCHITECTS

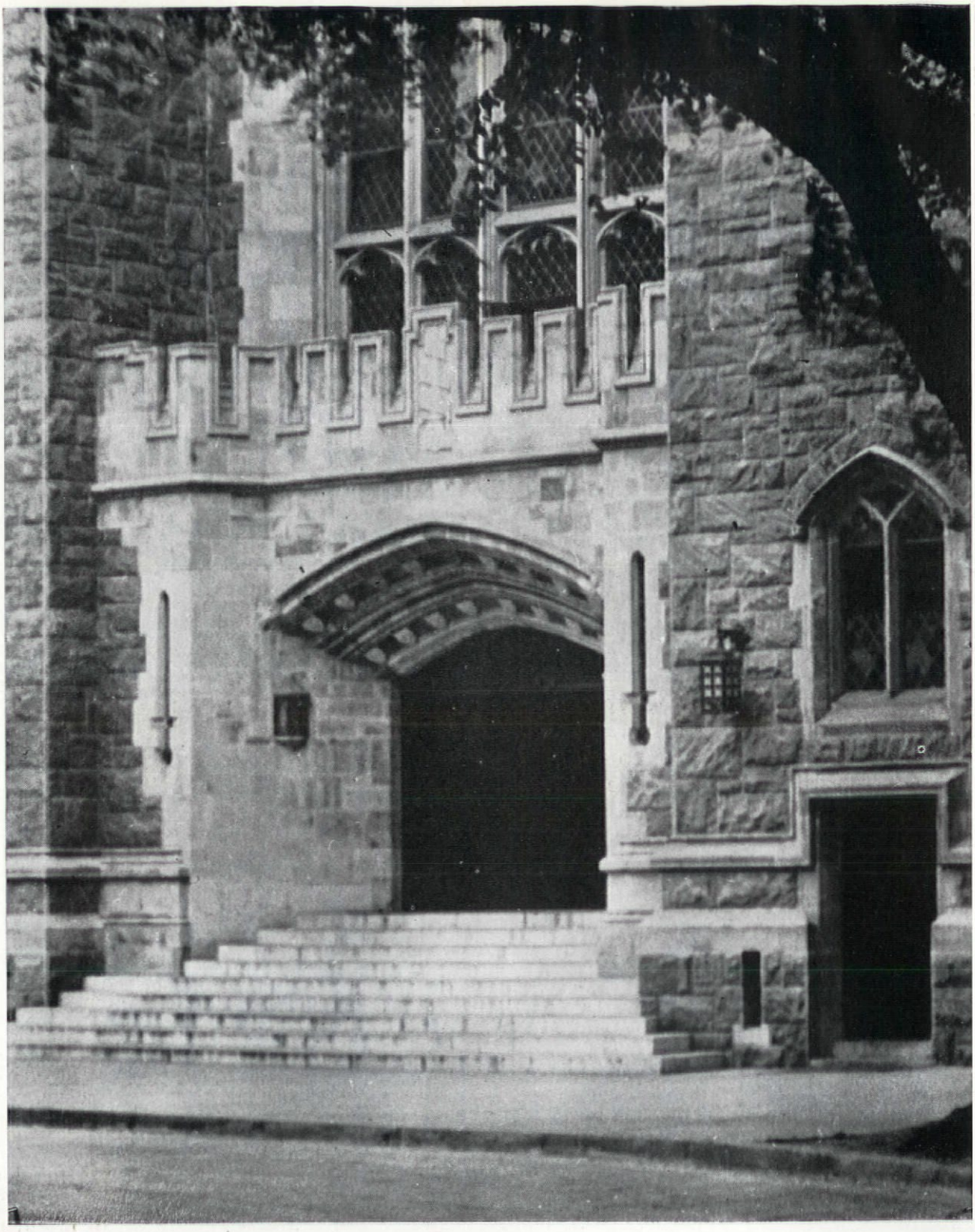
Ground floor plan.

first floor and is entered through three large doors, located in the center and on each side. The center or main entrance opens first into a monumental vestibule with walls and fan vaulting in limestone. The massive doors are of oak with panels and moldings in Gothic design. On either side of this entrance vestibule are monumental stairways with terrazzo treads and walls in gray face-brick with limestone window coigns. At one side of these stairways is an oak-paneled visitors' room, and on the opposite side two rooms used as the office of the mess officer of the post. The great dining hall follows in plan the "V" shape of the building. Each leg of the "V" is 70 feet in width and the entire length of this room is approximately 500 feet. Above a high oak wainscot which extends to the sills of the large Gothic windows the rough plaster walls rise to a height of 36 feet. The slightly splayed ceiling is decorated with large and small beams supported on massive stone corbels. The architects originally intended to decorate the ceiling in colored fresco but lack of funds prevented the execution of this work. The floor is of gray-green slate laid random ashlar. Directly back of the mess hall and located in the center of the "V"

plan is the great kitchen, square in shape with a high clerestory for light and ventilation. Two long coal ranges occupy the center of this room, containing eighteen fires, nine in each row. Along the walls are steam kettles and roasters, in front of which are eight serving tables with racks above. From the "V"-shaped mess hall there are three entrances into the kitchen. At each entrance on the kitchen side there is a coffee urn, a sink and two toasters. Grouped around the main kitchen are various rooms necessary to the successful operation of so large a culinary plant. These rooms consist of two small dining rooms for the help, a scullery with two large sinks, a general utility room with sinks, a dry grocery storeroom, a room for storing and distributing bread which is connected by a dumbwaiter with the bakery in the basement directly below it, cold rooms for the temporary storage of meat, vegetables and dairy products for each day's use, a room for preparing vegetables, and two large dishwashing rooms lighted and ventilated artificially, equipped with electric dishwashing machines, each having a battery of sinks. Also between the dining room and kitchen are located the lockers or individual cupboards for china and tableware. Each waiter is required to look after and be responsible for the china and utensils used on his own table. This arrangement saves much breakage and loss in the china and silverware. In all rooms in the kitchen department on both the main floor and the basement the walls are faced with cream-white glazed terra cotta blocks 7″ x 12″ x 4″, and all of the floors are covered with 6″ x 6″ red quarry tile, supplied with occasional floor drains.

Although designed principally to house the mess hall and culinary department, this building also contains the cadet store with its salesroom, tailor shop, cobbler shop and other activities, at the extreme left end of the building. On the fourth floor, which is directly above the dining room, are storage and filing rooms with a small kitchen, rest room and dining room for both men and women employees of this department. Space is also provided on this floor for dormitories for the use of visiting athletic teams as well as the male employees of the mess hall. Connected with the ten small dormitories are toilets and showers, storerooms and a central living room. On the fifth floor the tailoring department occupies the extreme left end, which is entirely shut off by a fireproof partition from the two large drafting rooms. At the center of this floor is a large lecture hall in which the seats are arranged in radial banks similar to those in operating theatres. Back of the central desk is a blackboard and rolling picture screen. Adjacent to this lecture hall are rooms containing complete facilities for photographic work, a library, conference rooms, instructors' rooms, a professor's office and private toilets. On the sixth floor the upper part of the lecture hall occupies the center. At the top of this hall above the last row of seats is located the moving picture room which projects outside the building and is supported on huge stone corbels. Also on this floor is a map room with adjacent storage vaults. The lecture hall has a 6′ 6″ oak wainscoting with rough plaster walls above. In the plaster walls picture hook openings are countersunk at different levels to be used for hanging exhibitions of photographs or drawings. A large skylight illuminates this lecture hall. Four stairways and four elevators are included in the plan.

The basement is occupied almost entirely by the culinary department. Here are such rooms as the bakery with two ovens, a bread storage room and pantry with dumbwaiters, the steward's office, lavatories and locker rooms for the waiters and kitchen employees, a service elevator and service stairway, a butcher's room, linen room, vegetable preparing room, vegetable storeroom, bins for the storage of range coal with a lift to the kitchen above, and a service driveway through the basement for the delivery of supplies.



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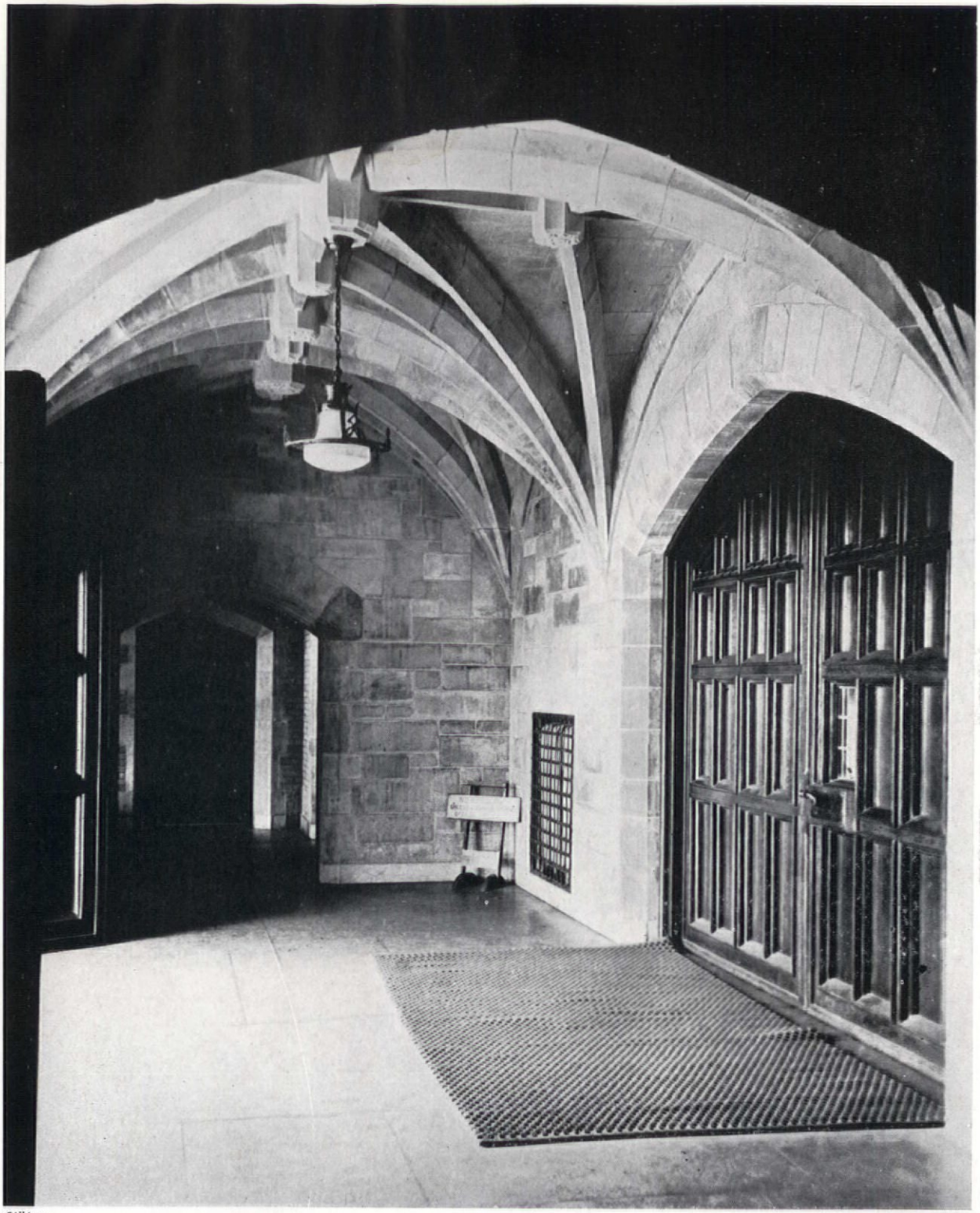
Detail of entrance.



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Main entrance vestibule.

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Foyer at entrance to lecture room.

PORTFOLIO OF CURRENT ARCHITECTURE

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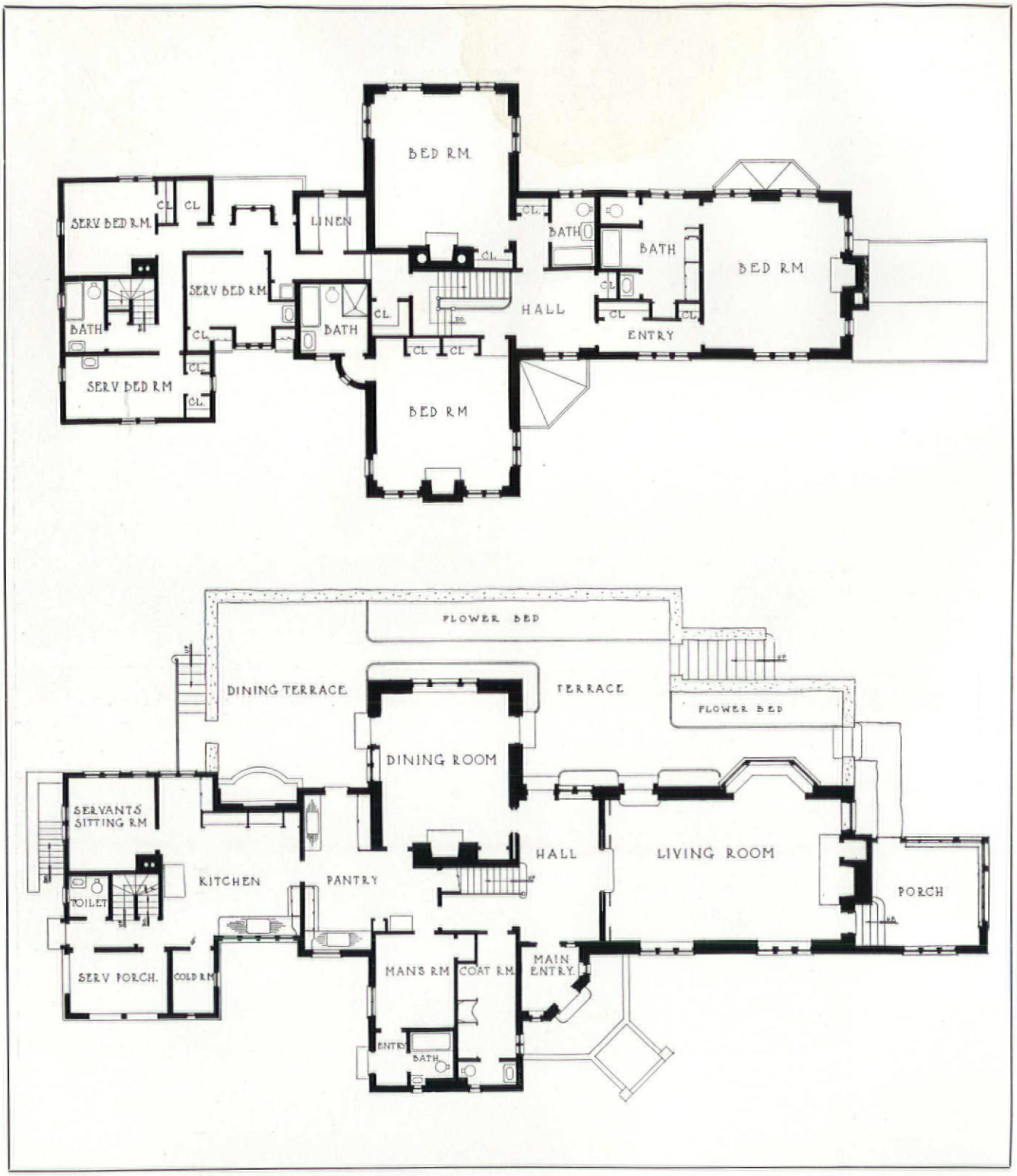

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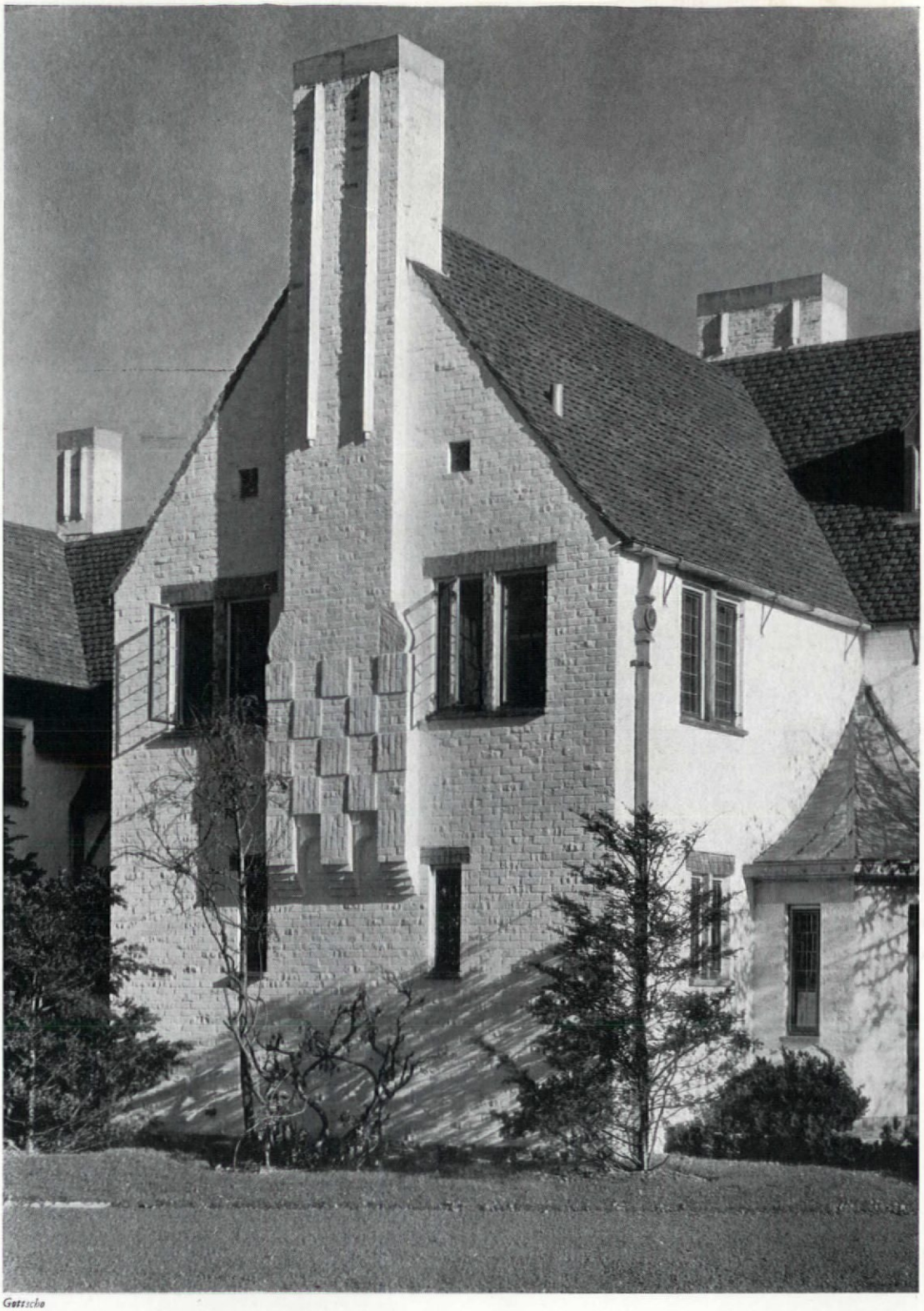

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HOUSE OF F. S. SMITHERS
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HOUSE OF MR. AND MRS. L. M. GUNDERSEN
CLEVELAND HEIGHTS, OHIO
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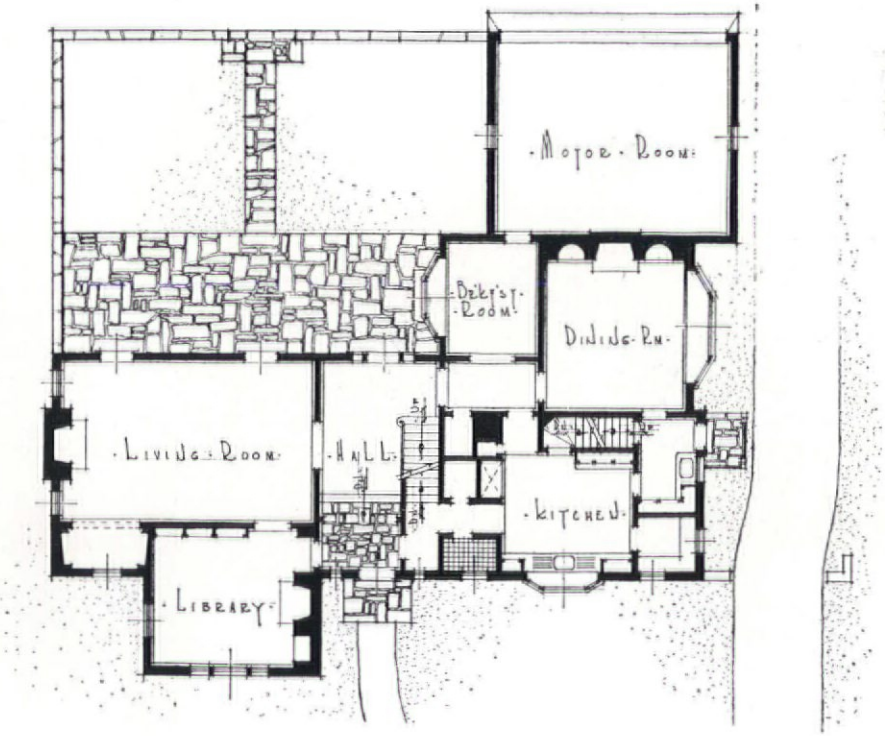

HOUSE OF MR. AND MRS. L. M. GUNDERSEN
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Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

Entrance front.

Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

Garden entrance.

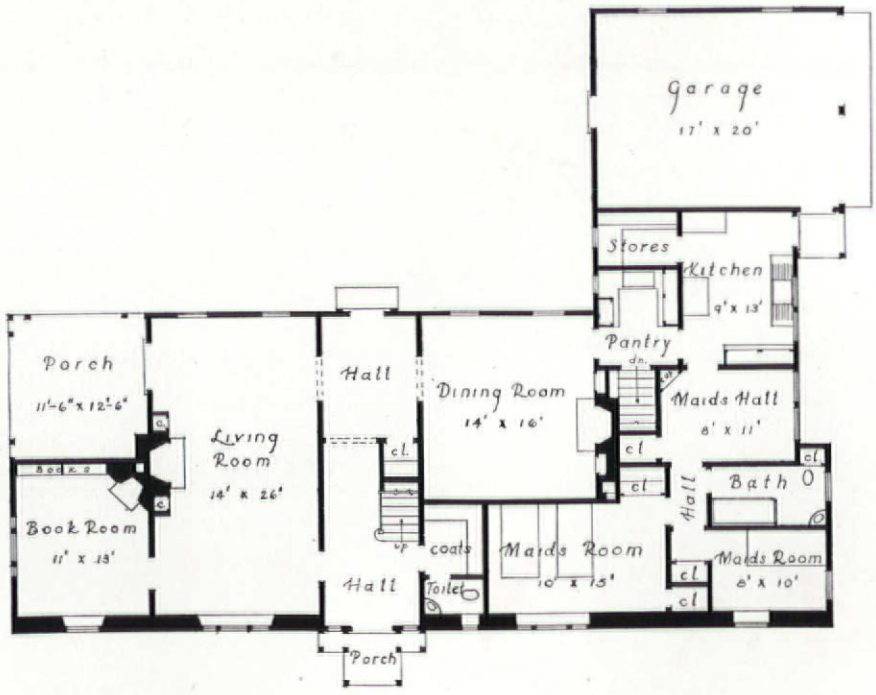
Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

Entrance doorway.

Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT



Dreyer

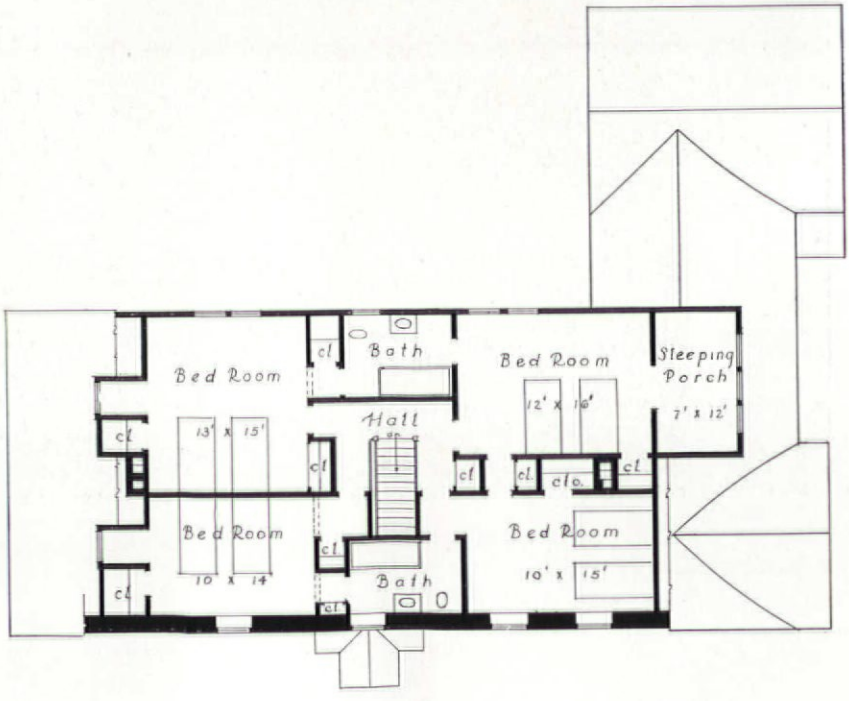
HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

Garage and service entrance.

Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE ! ARCHITECT

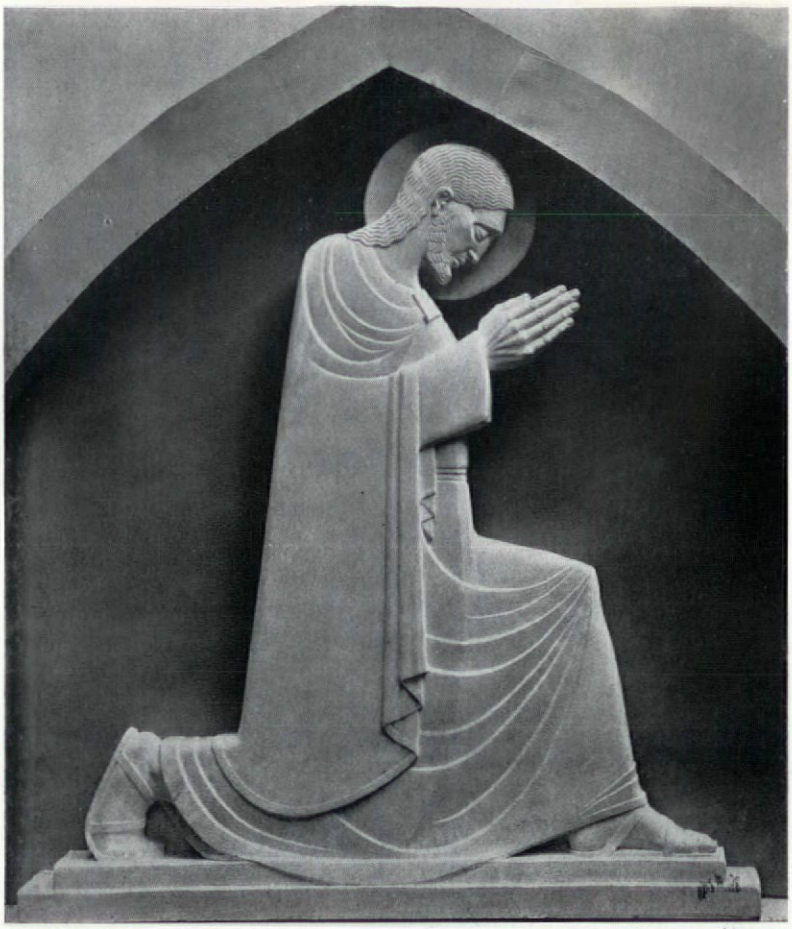
Dining room.



Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

Living room fireplace.



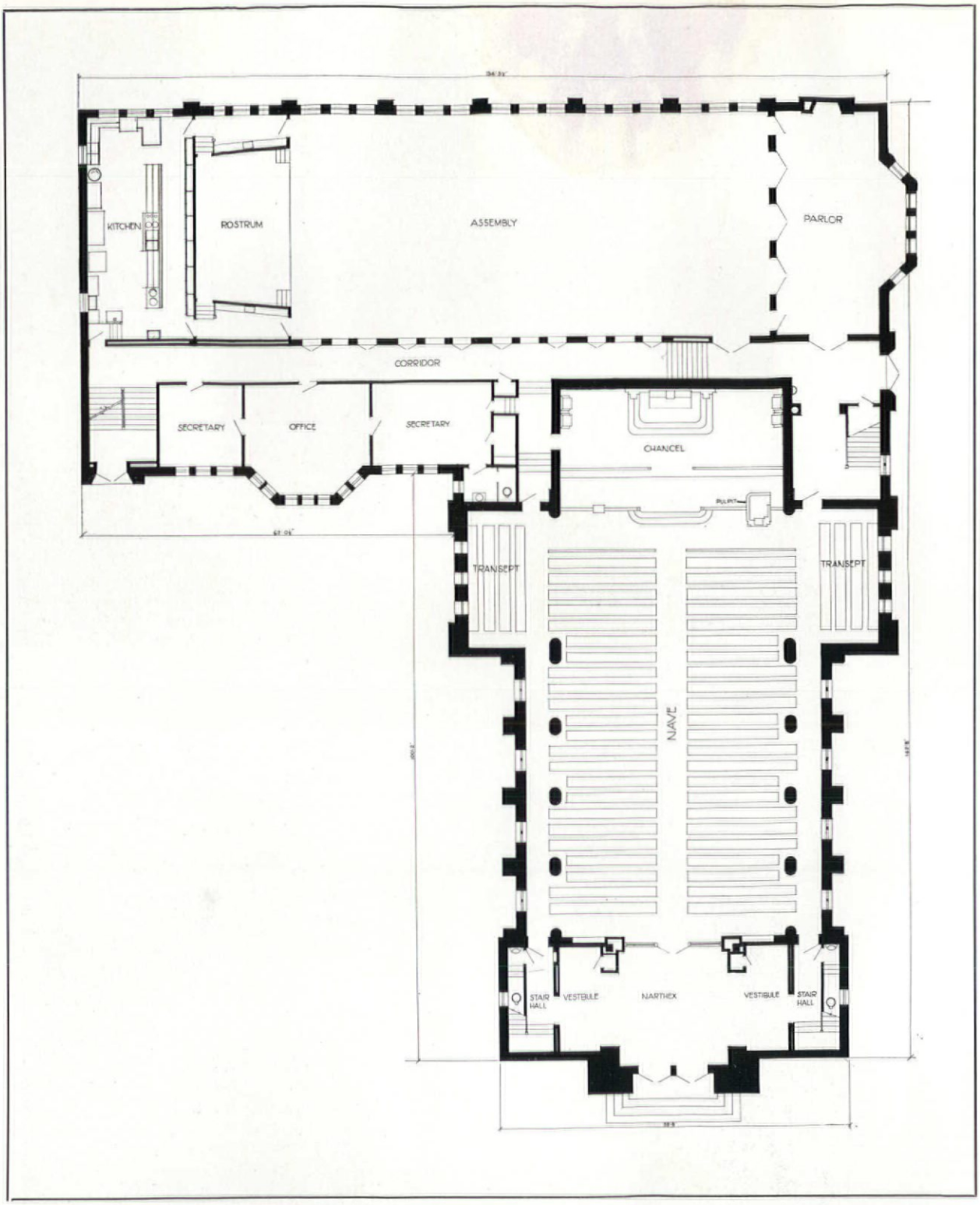
Sculpture executed by David Evans, sculptor, while instructing at Cranbrook Academy of Art, Cranbrook, Michigan, 1929–1930.

"CHRIST IN PRAYER"
CHRIST CHURCH
CRANBROOK, MICHIGAN

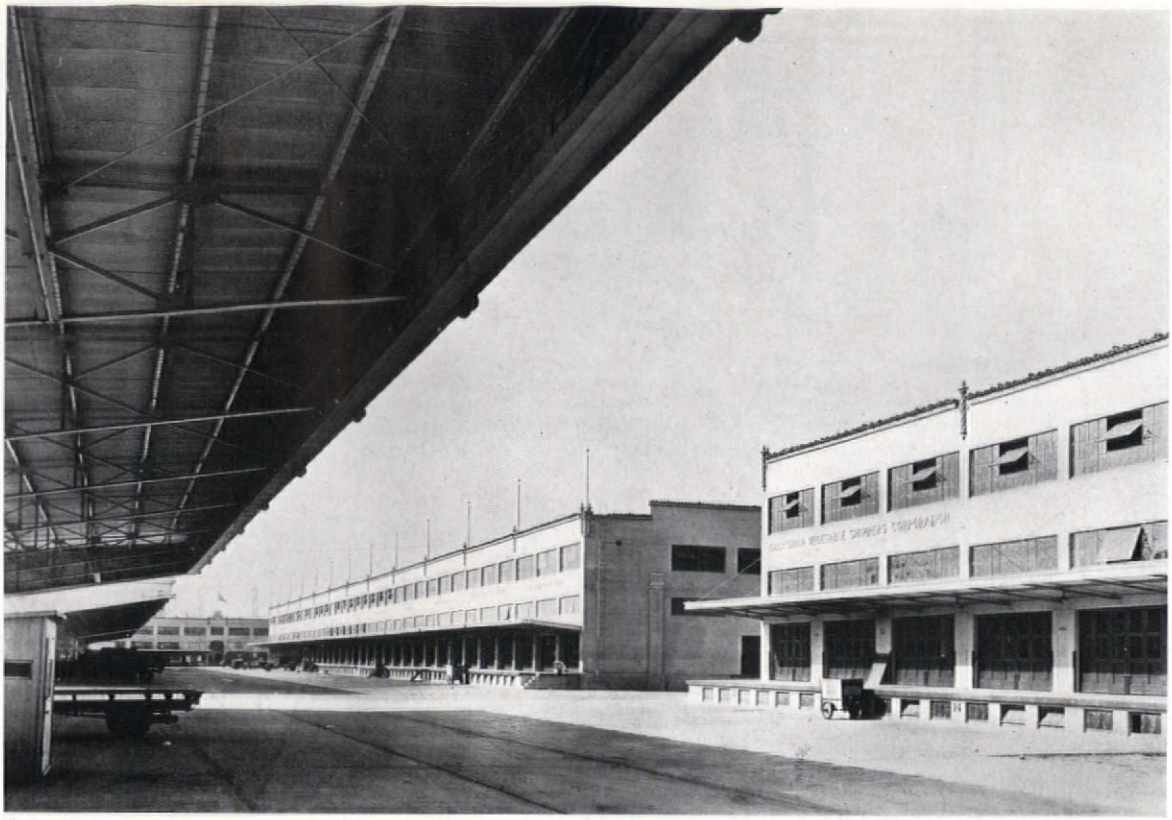
Arnold Studio

"FOOTBALL" A RELIEF IN BRONZE
ERECTED AT CRANBROOK SCHOOL FOR BOYS, MICHIGAN

GRACE EVANGELICAL LUTHERAN CHURCH
RIVER FOREST, ILLINOIS
TALLMADGE AND WATSON, ARCHITECTS

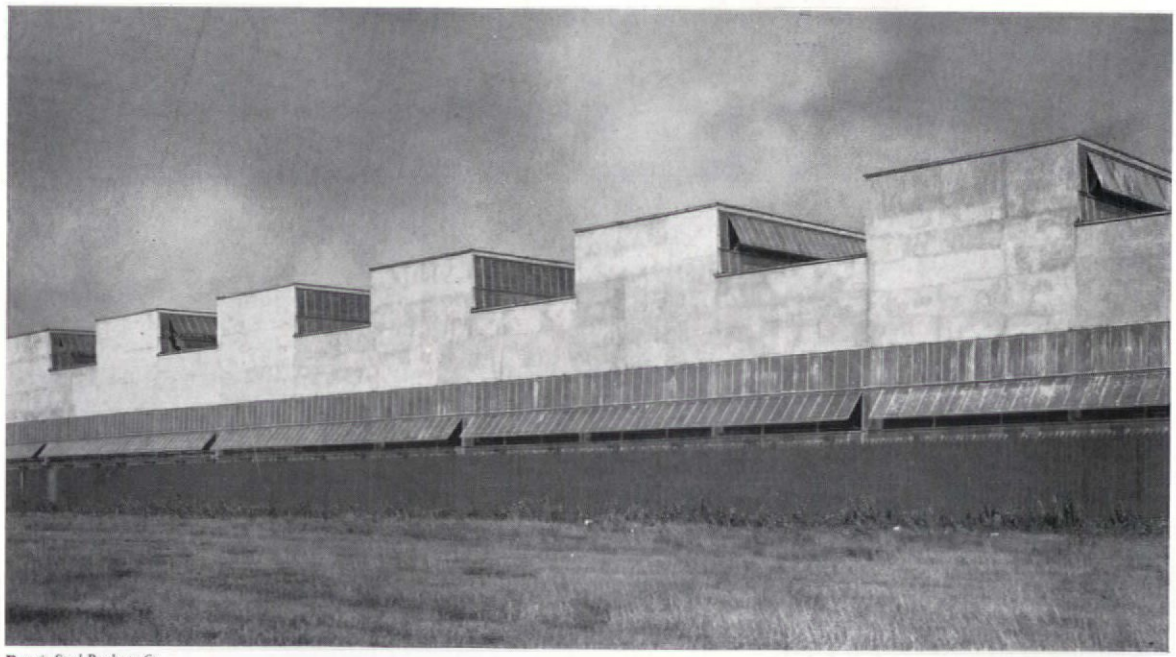


GRACE EVANGELICAL LUTHERAN CHURCH
RIVER FOREST, ILLINOIS
TALLMADGE AND WATSON, ARCHITECTS



Morgan

PRODUCE TERMINAL
LOS ANGELES



Detroit Steel Products Co.

FOUNDRY, NATIONAL MALLEABLE CASTING CO.
CHICAGO

Van Anda

LIBRARY IN NEW YORK OFFICE OF
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS

Van Anda

OFFICE FOR LITTLE, BROWN AND CO., PUBLISHERS
NEW YORK CITY
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS

Gottscho

A DRUG STORE THAT OPERATES A RESTAURANT

ELY JACQUES KAHN, ARCHITECT

By Otto Teegen

The Broadmoor Pharmacy, located in the Lefcourt-Colonial Building at 41st Street and Madison Avenue, is essentially a drug store and restaurant. The drug store occupies a portion of the first floor while the entire basement is given over to the grill and tea room, kitchens and pantry. A wide staircase connects the upper floor with the lower and is the only means of communication between the two. Since the area was leased when the building was almost completed, there were many obstacles to be overcome, not only in the disposition of the plan but in the matter of pipes and ducts coming from all parts of the building and centering on the basement ceiling.

The drug store has two entrances, one from the street, the other from the building's main elevator hall. Although actually not of great dimensions, the store gives an impression of spaciousness with a straightforward communication to the main staircase. The walls are paneled to a 14-foot height with Oriental walnut cross-grained in approximately 15″ squares. A 6″ base of Vermont Verde Antique connects the wood paneling with the patterned marble terrazzo floor of Botticino and Cardiff green. The ceiling, with a molded plaster cove, is tinted an ivory cream, and from it are suspended six ceiling fixtures providing ample light even when the soffits of the various fountain reveals and display cases are not lighted. The south wall is perforated with built-in display cases which have sliding glass doors with metal frames; these are lined with mirrors and lighted through frosted glass soffits. All the metal used throughout the interior is chromium-plated with a satin finish. The north and east sides of the store are used for the soda fountain. The counter itself is faced with Oriental walnut and has thirty stationary stools upholstered with leather. A 9″ step at the base of the counter provides a much-to-be-desired comfortable foot rest. The space between the structural columns was used for soda

Gottscho

Men's grill.

BROADMOOR PHARMACY AND RESTAURANT
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

fountain equipment, and the reveals are lined with mirrors and lighted from above through glass soffits. Small metal perforated grilles in the woodwork, placed over each lighted soffit, become decorative features as well as means to ventilate. There is no forced ventilation on the first floor.

The staircase, leading to the restaurant below, is approximately 10 feet wide and faced with Botticino marble; the steps have Botticino risers and Travertine treads. It terminates in the foyer and is on axis with the small waiting room, with walls of plaster painted in three shades of warm sienna and a floor of green terrazzo in pattern. The foyer is paneled in Oriental walnut, the ceiling is of plaster and has a central lighting fixture, and the floor is of terrazzo laid up in alternate squares of Levanto and yellow Verona. Two recesses on each side of its length have mirror backs and are lighted through glass soffits. From the foyer one passes directly to the grill and tea rooms.

The main portion of the grill room is about 60 feet square and built around the four central columns. The ceiling height of this portion is 12 feet, and in the molded plaster frieze below it are placed the ventilating louvres. Because of ducts and pipes, the rest of the room was brought down to a 9-foot height or the total height of the woodwork. The lower part of this has a 3-foot rosewood base and chair rail, while the upper part is of American walnut with 4″ rosewood strips. The four center columns are of American walnut with 2″ vertical rosewood strips terminating in lighting fixtures. On the plaster ceiling are other fixtures with painted border decorations, while some light is provided by wall brackets. All these fixtures, made by Walter Kantack, are of lacquered brass and particularly interesting because no castings, but only standard rolled sections, were used in their manufacture. The floor is of terrazzo laid in pattern, and the marble base adjoining it is of Vermont Verde Antique. This

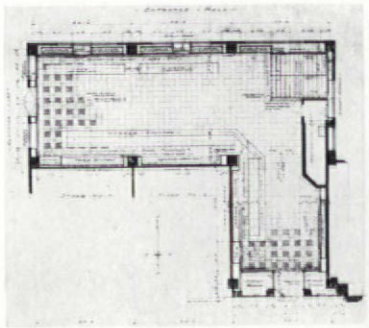
Gottscho

BROADMOOR PHARMACY AND RESTAURANT
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

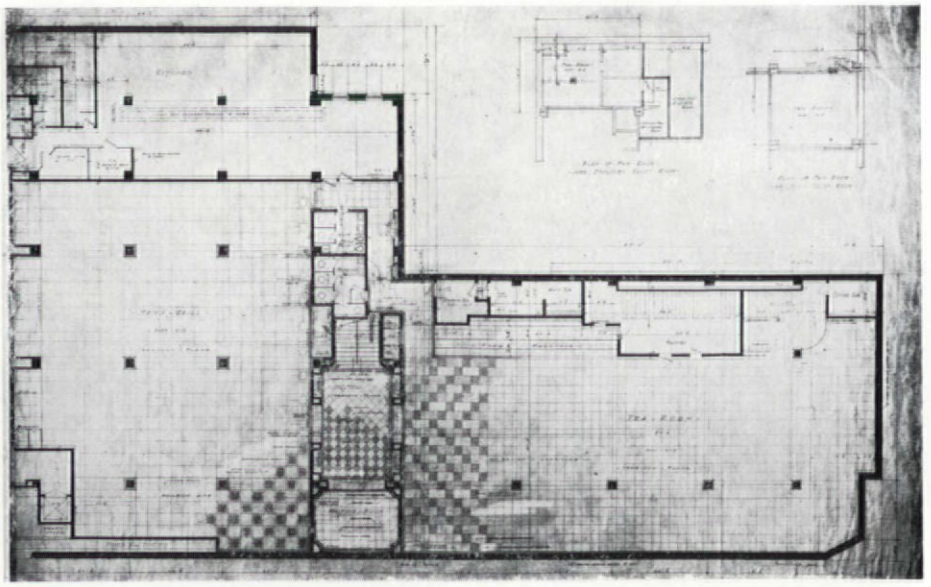
Stair foyer with view of men's grill to left.

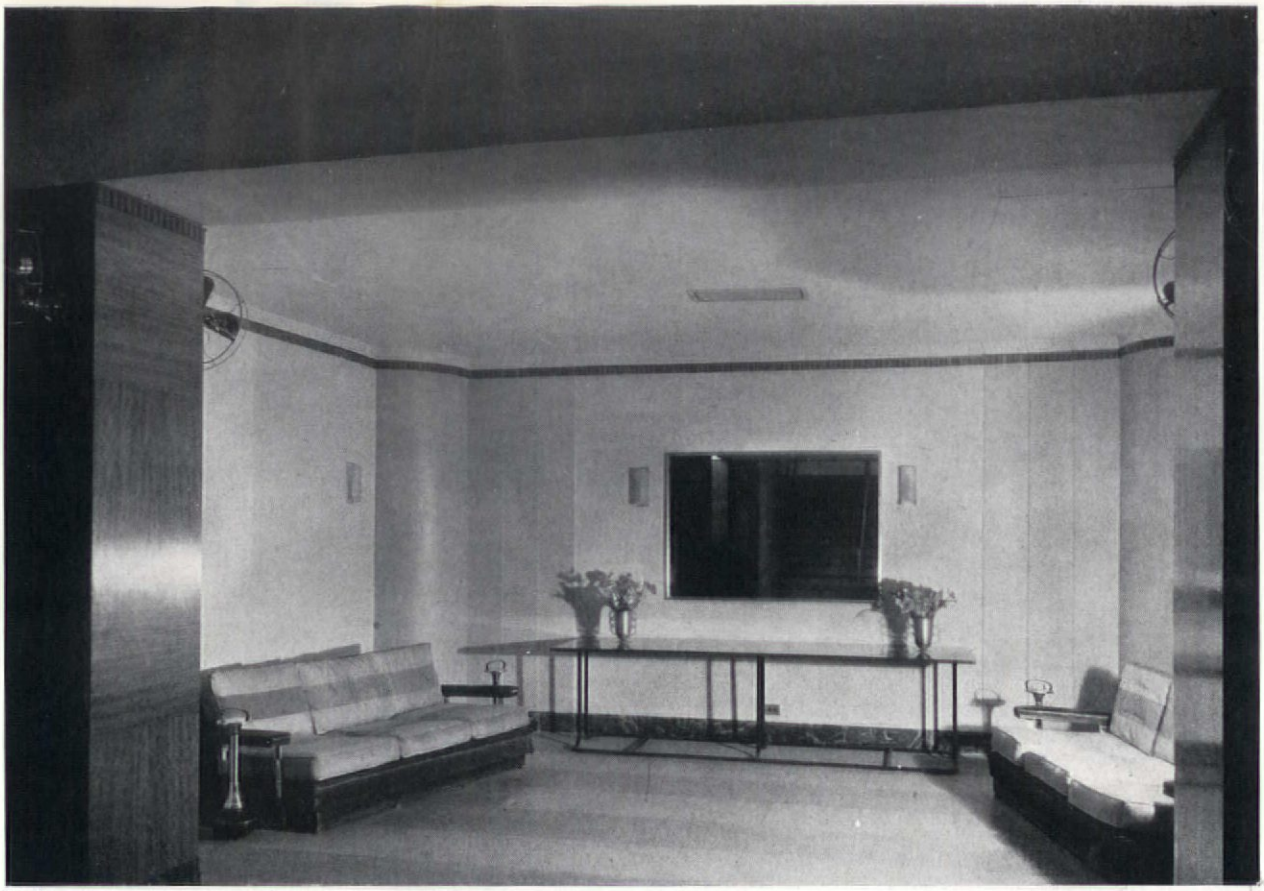
Basement plan: kitchen, men's grill, tea room, waiting room and stair foyer. ➡

Ground floor plan: pharmacy and stairs. ⬇



Both plans in same scale.





Gottscho

Waiting room opposite stairs and between men's grill and tea room.

BROADMOOR PHARMACY AND RESTAURANT
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

room at present seats 400. Both the chairs and tables are of a simple design, the wood being colored light yellow and the Fabricoid upholstery of the chairs vermilion.

The tea room is very light and gay. Except for the chair rail, small ceiling cornice and the soda fountain front, no wood was used. The five free standing structural columns were faced with mirrors down to the chair rail, and on the walls, at intervals, other large mirrors were placed. The spaces between these mirrors are of plaster and have received treatment in color by Putnam Brinley. On either side of each wall mirror are lighting brackets, while from the plaster ceiling are suspended lighting fixtures, the metal parts of which are lacquered in green and black; an etched glass bottom allows some direct light although the lighting of the room on the whole is indirect. The furniture in this room is of the same color and material as that used in the grill with the exception of the tables which have a vermilion top covered by a sheet of glass. The floor is of green and black terrazzo laid in pattern. Service for this room, at present with a capacity of 400 chairs, is provided by the kitchen and augmented by a pantry located on the south side adjoining a long soda fountain which seats 16. The communication to and from the pantry and kitchen is direct and efficient. A back staircase, leading from the room to the main lobby upstairs, has been provided, but it is little used inasmuch as the main staircase is adequate and more convenient.

Although the area of the kitchen and pantry may seem on plan rather confined, its equipment has been so arranged that it is entirely adequate to provide the 1,500 patrons who crowd the grill and tea room each noon. In conjunction with it are store and refrigerator rooms and the help's locker rooms. Only women are used in the kitchen. At the moment there are thirty of these, sixty-eight waitresses, and twelve fountain men, besides various hostesses and cashiers.

Galloway

Rooms expand on the same floor level and require windows arranged horizontally. This principle is clearly illustrated by the night lighting of the Daily News Building, New York City. The normal horizontal movement is interrupted by vertical bands which are unnecessary with steel construction.
John Mead Howells and Raymond Hood, Architects.

WINDOWS

By A. LAWRENCE KOCHER and ALBERT FREY

Good architecture is not dependent upon window shapes. Windows should be given sizes and proportions that are suitable to daylighting needs.

The primary purpose of windows is to provide daylight and ventilation to building interiors. Windows should also permit unobstructed view of surroundings. To aid requirements of view the glazed area should be without division bars unless structurally necessary.

Physicians and illumination engineers have consistently called attention to the value of daylight, particularly of sunlight, but "how it really acts and how its benefits can most practically be secured we are just beginning to comprehend."* The Metropolitan Life Insurance Company in its Statistical Bulletin has made a tabulation of data regarding deaths found in a random selection of records of the 40,000,000 risks which it has carried . . . "and found that death rates are higher during the darker winter months than at any other time of the year and that the low death rates are found during the summer months." §

Windows should be designed to make usable a maximum of floor space with evenly distributed daylight. Light needs are the basis for determining window sizes and their placement. These needs can be determined by the use to which floor space is put. Thoughtful investigation by the architect with advice of technical illumination experts is essential. It is obvious, as an example, that the laboratory where microscopic work is carried on requires more light than the room for library book storage, where light is injurious to bindings. Light for general office work requires approximately ten foot candles† of intensity at a desk level, thirty inches above the floor. We are informed by experience tests that our "seeing improves with increase in illumination. Speed of vision and accuracy of sight increases. Ocular fatigue decreases."‡

One of the most astonishing discoveries of lighting experts is the fact that the room flooded with daylight from an entire wall of glass is more satisfactory for working and less disturbing to the eye than the room with light from a single moderate size window. In other words, the greater the glass area the more favorable the working conditions will be. This phenomenon is checked by daily experience. There is no significant eye strain in reading on a porch that is open on three sides but there is eye strain in typing or reading in a room with light from a single window that is surrounded by dark wall areas. It is essential, therefore, to seek daylight intensity that is evenly distributed, without excessively bright or dark spots. Lighting engineers offer the rule, "The brighest spot in any building should not have more than about three times the illumination of the dimmest spot in the same building."

With the increase of glazed area to a maximum, there arises the acute problem of heat loss in winter and the need to exclude the intense heat rays of summer. There is no serious difficulty in adjusting the heat to a comfortable temperature in winter by an increase in radiation. Heating has been satisfactorily solved for hospitals, greenhouses and industrial buildings.

There are more serious difficulties in the control of summer heat. Window shades with polished metal blades could be used to deflect the sun's rays and at the same time to admit some light. Awnings or shades are also effective. Ventilation by natural or artificial methods would produce the circulation needed to lower room temperature.

CHECKING LIST

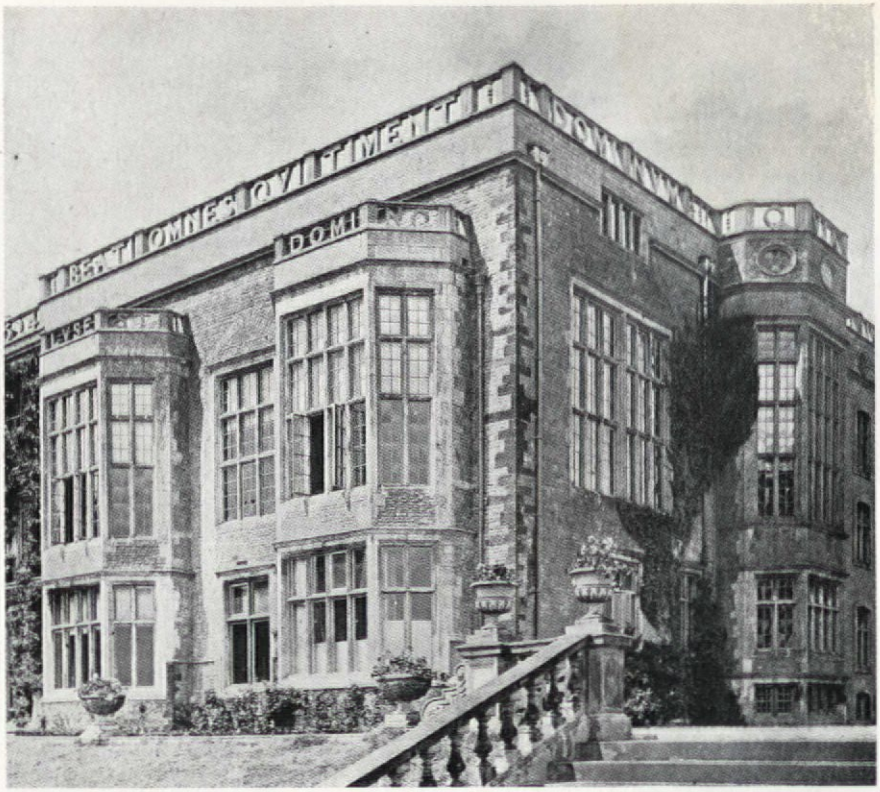
Size and shape determined by daylighting needs.
Should make usable a maximum of floor space.
Minimum obstruction by framework and muntins.
Greater glass area at base of buildings than for upper stories.
Window area should be at least 30 per cent of floor area.
Room depth should not exceed twice the window height for most satisfactory working conditions.
Glass area should continue to ceiling.
Adaptability to control of light by shades.
Provision for heat control in summer.
Ease of operation.
Convenient possibilities for cleaning.
Provision for ventilation when artificial ventilation is not supplied.
Non-interference with screening when opening windows.
Freedom from air leakage.
Glass free from distortion.
Double strength glass for areas in excess of three square feet and for all glazing of printing plants and manufacturing buildings.
Plate glass for sizes in excess of 12 square feet.
Small glass sizes for factories on account of frequent replacement.

* Proceedings of the American Society of Civil Engineers, May, 1925, pp. 800–802.

§ Regional-Survey of New York and its Environs, vol. VII, p. 152.

† Foot candle is a measure of light quantity thrown by a standard candle on a foot square surface, one foot from candle.

‡ Industrial Daylighting, p. 5.



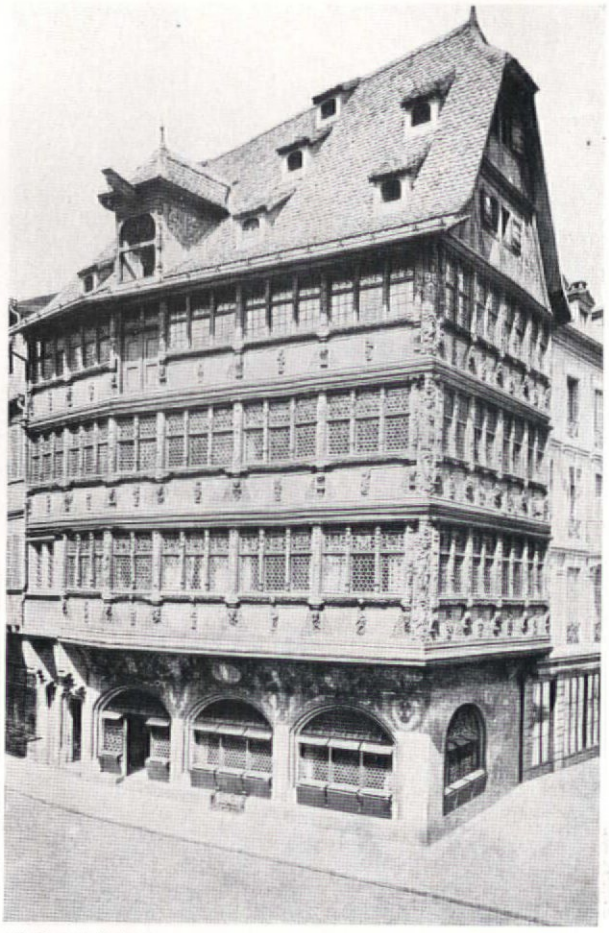
English Homes, by H. Avray Tipping, vol. II

← Castle Ashby, Northampton-shire, England.

Interior, Oriel Hall, Nettle-combe Court, Somerset. ↓

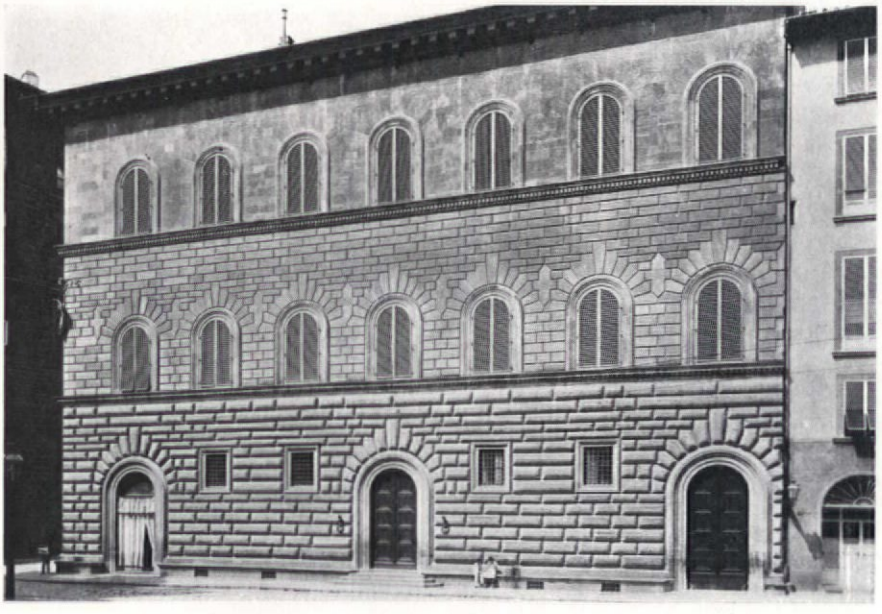
English Homes

Windows characteristic of England and northern Europe are of generous size suited to purpose and to their time. They were created so as to flood interiors with ample daylight in a region of low light intensity. Window mullions were reduced to a minimum to increase glass area.

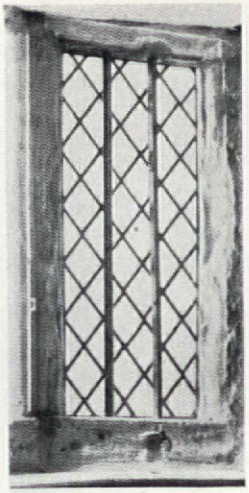


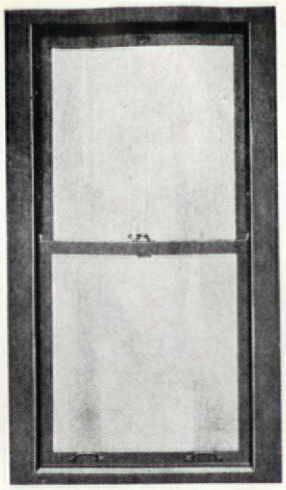
Alte Deutsche Bankunst

A typical multi-storied building with continuous windows on each floor. A method of daylighting that is efficient and that conforms to the levels for work and living. The House Kammerzell, Strassburg.



Windows typical for Italy, a country with ample sunlight, were limited in size and widely spaced so as to exclude the too intense light and heat. The small window sizes, however, were sufficient for daylighting rooms. Palazzo Gondi, Florence.



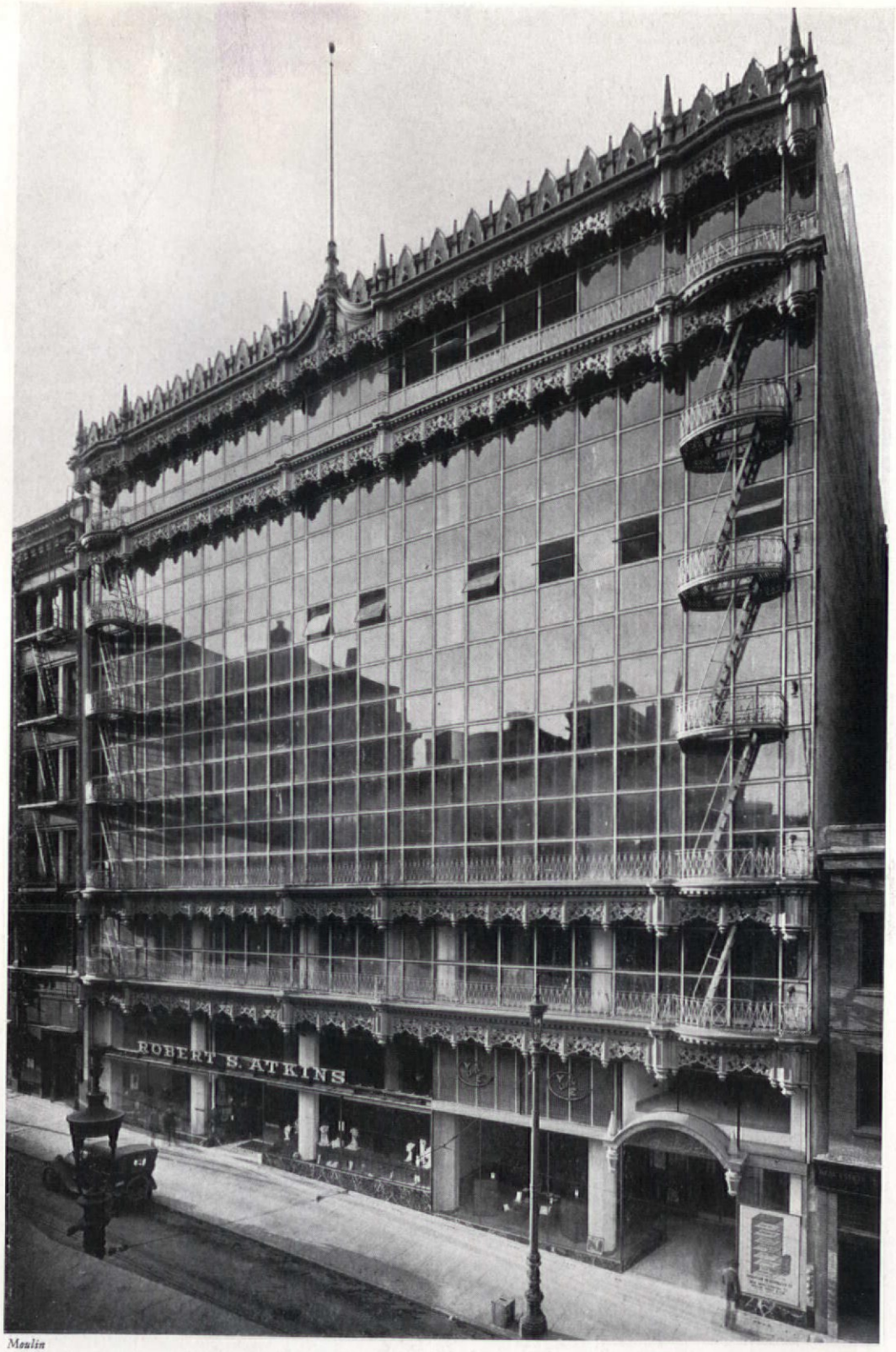


English Homes

Window divisions of the historic periods were determined by manufactured sizes. They never had esthetic purpose. The windows of the older English cottages and colonial dwellings are attractive, not because of the small glass divisions but because of a general harmony which resulted from a logical and non-imitative design.

The large sheets of glass produced by present day methods should be used for window display, offices, schools and residences, both for economy and good lighting. Framework and muntin bars should be of minimum width.

Maximum of glazed area with a minimized classical enframement. This could not be accepted as the best solution because decorative details applied to the surface of the building add to cost without increase in convenience. Building for Doll and Sons, New York City, 1920. Alfred Bossom, architect.



Moulin

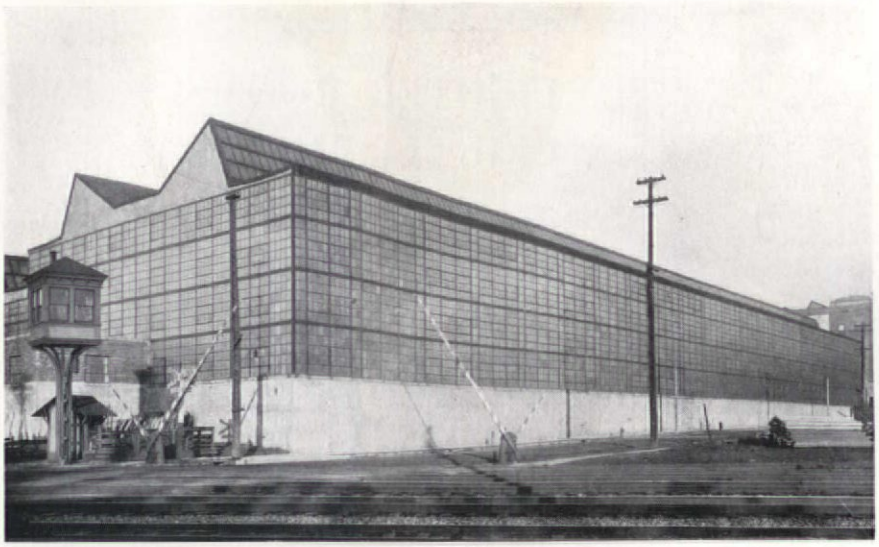
Completely glazed wall which determines the character of the building and its use for display and sale of wearing apparel. The Gothic trimmings do not contribute to such a purpose. It is however a more satisfactory solution for interior daylighting than later examples with heavy wall construction and widely spaced windows. Hallidie Building, San Francisco, (1918). Willis Polk and Company, architects.

Galloway

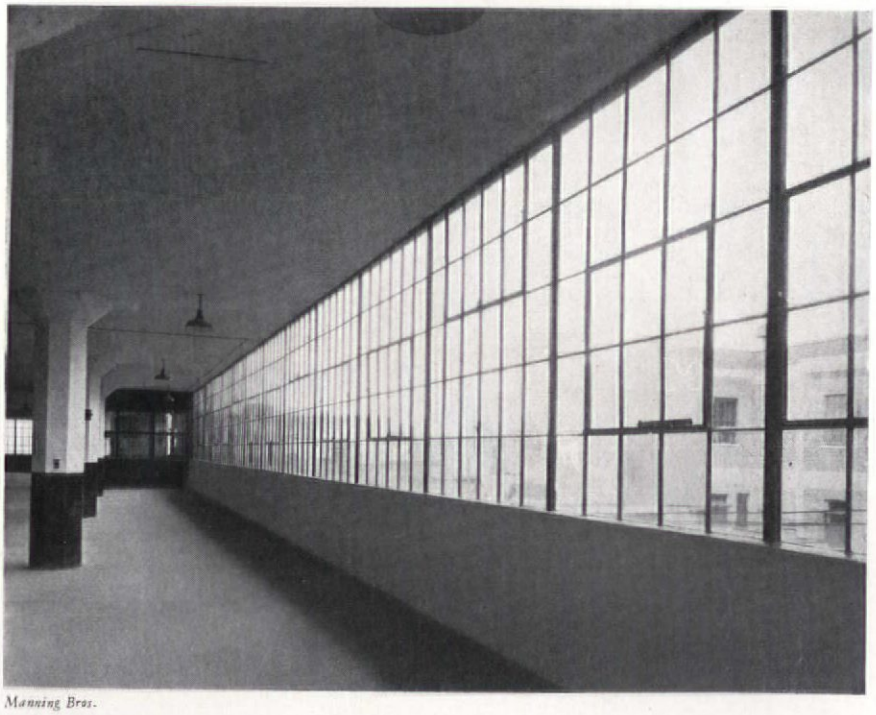
The gridiron window pattern was evolved from Renaissance architecture which had a spaced fenestration because of limited light requirements. This arrangement, while attractive, suggests supporting wall construction (walls are actually supported by the steel framework). 120 Wall Street, New York City.

Ely Jacques Kahn, architect.

Interior of an office which illustrates darkened walls and limited light with the spaced window scheme. Note decrease in daylighting with distance from exterior windows. See pages 135, 136 for analysis of effective lighting.

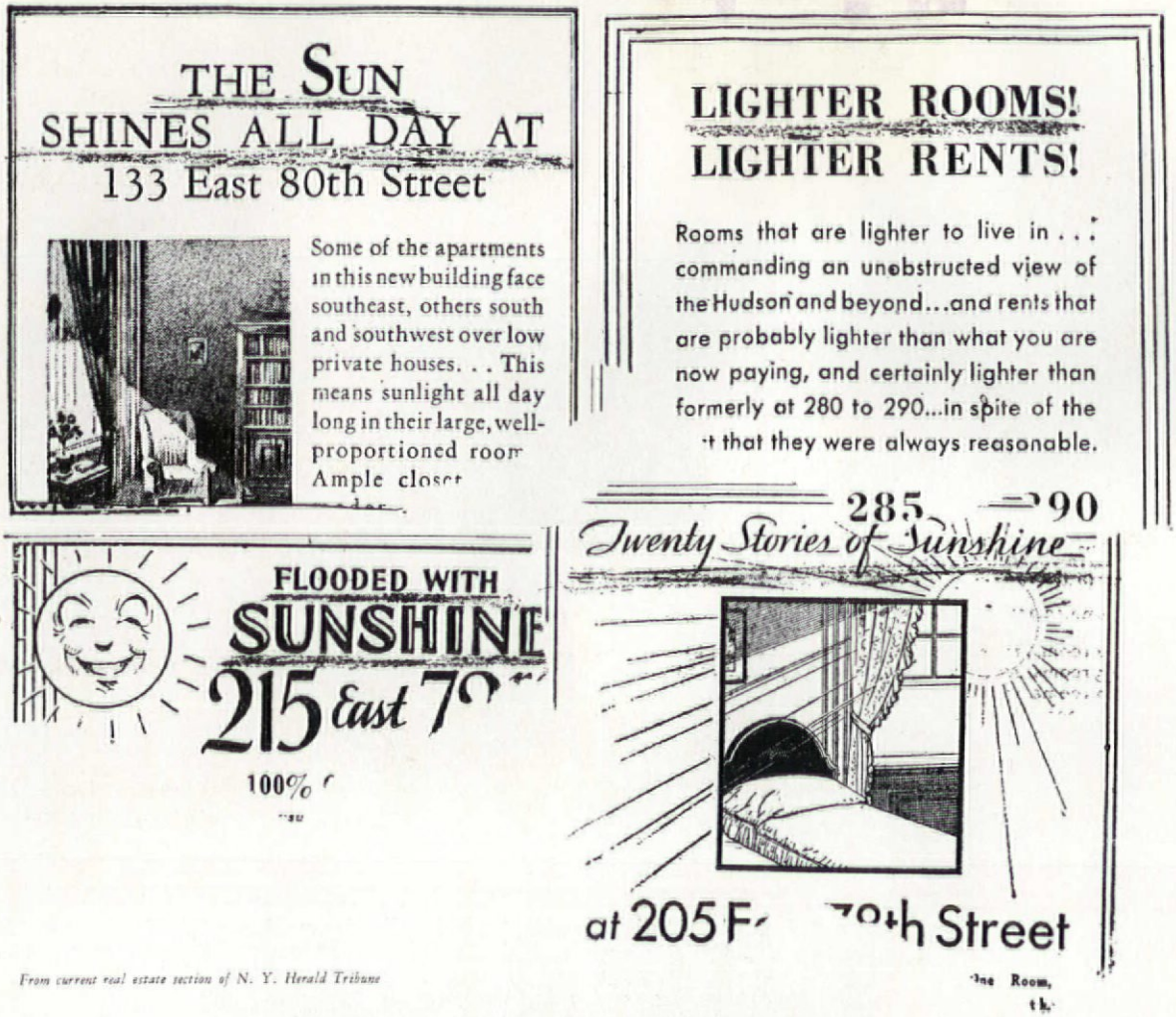


The factory, generally speaking, has been free from architectural or stylistic restrictions. In order to obtain well lighted working space, exterior walls have become literally "walls of glass." There are more favorable light conditions in many factories than in office buildings and apartment houses.



Manning Bros.

A maximum of daylight is obtained with the continuous window. This is made possible with cantilever floor construction. Graham Paige Service Building, Detroit, Mich.



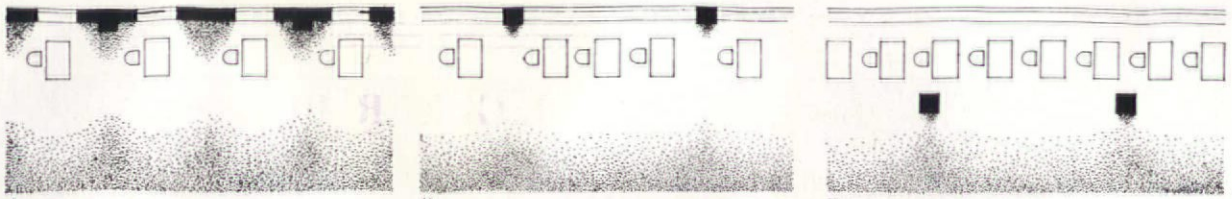
From current real estate section of N. Y. Herald Tribune

Sunshine featured in renting apartments. The public wants light and sunshine, otherwise realtors would not stress it. Tenants pay more for apartments or offices that have much light. Rooms with small windows and light that is unfavorable for work rent with difficulty. Architects should be guided by such demands.

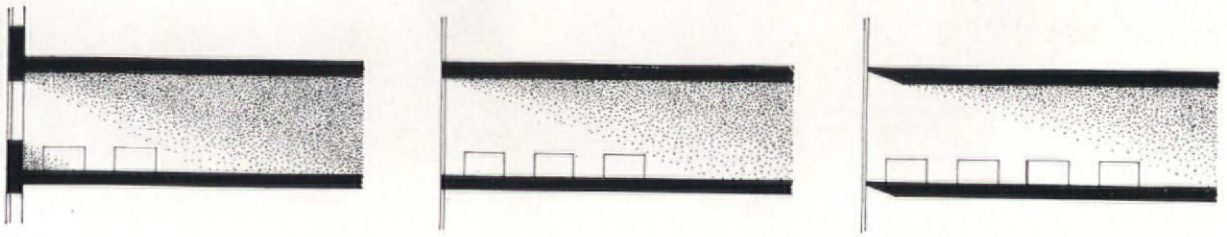
"The more daylight you have inside a building, the better, if it is evenly distributed. No maximum limit for good seeing has yet been found."

"For the reason just given, it is perfectly safe to design for as much light as possible. Be sure you get enough light. Don't worry about getting too much."*

* Industrial Daylighting, p. 6.



Plans with actual and suggested methods for daylighting office space. (1) Typical arrangement with moderate size windows. (2) Exterior wall reduced to supporting columns with increase of adequately lighted area. (3) Maximum lighted area with columns set back from outer wall with cantilever floor construction.



Sections showing depth to which adequate daylight is transmitted. (4) Windows of limited height (typical). (5) Glazed area from floor to ceiling. (6) Depth of well lighted working space increased by tapering ends of cantilever floor construction.

Effective lighting for clerical work in an office requires ten foot candles of light intensity at desk height. "Ten foot candles is more light than formerly was considered necessary but experience shows that seeing improves with increase in illumination. Speed of vision and accuracy of sight increase. Ocular fatigue decreases."*

"The daylighting on a horizontal plane outdoors, at noon, on a clear day in June sometimes is as much as 10,000 f. c. but it does not harm the normal eye because the eye adjusts itself to such intensities. . . . No such intensities can be secured inside a building."†

The office, schoolrooms or apartment would be efficiently lighted if the window area is at least 30% of the floor area.

Contrasts of light and dark areas in any building should be so adjusted that the brighest light should not exceed three times the illumination of the dimmest area in the same room.

The most favorable place for reading or work is on a covered porch completely open on three sides.

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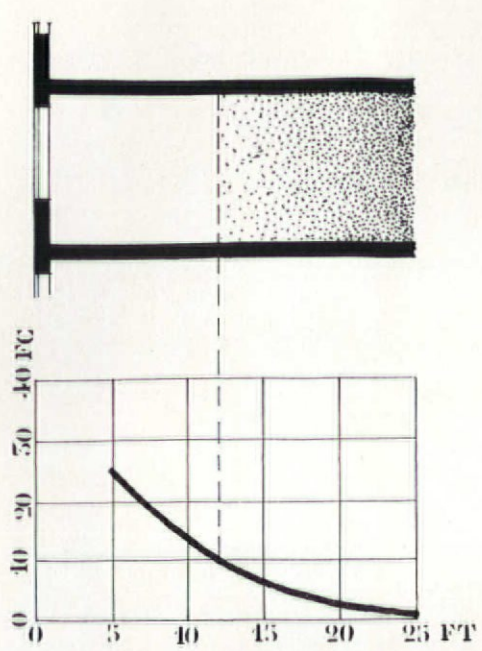
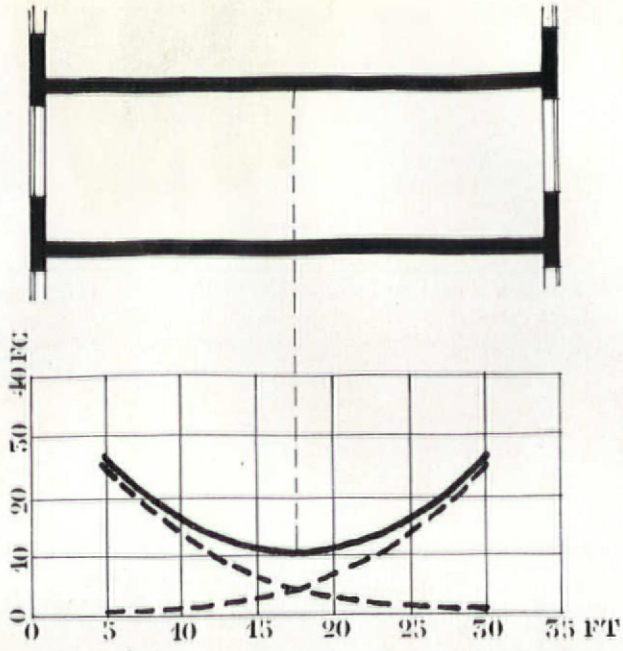
* Industrial Daylighting, p. 5.
† Ibid p. 6.

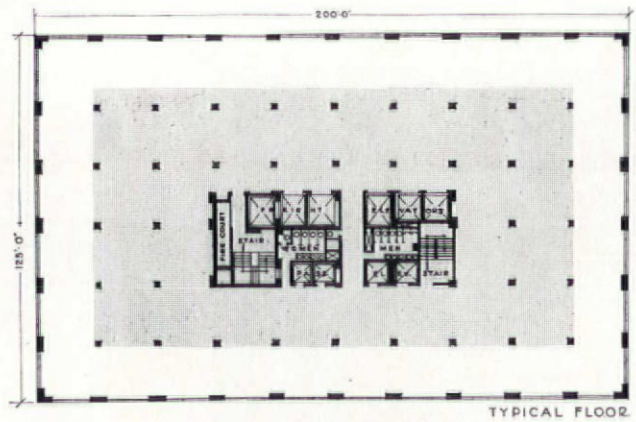




SECTIONS WITH DIAGRAMS SHOWING HOW MUCH LIGHT IS ADMITTED BY WINDOWS.

A vertical window admits satisfactory daylight into room interiors approximately twice the window height.

A room that is lighted from two opposite sides has adequate daylight that extends from each side a distance of three times the window height.



Typical floor plan of loft building showing adequate daylight area and shaded part that requires artificial illumination during most working hours.

HOW MUCH DAYLIGHT IS REQUIRED?

	Minimum f. c. 15 years ago	Minimum f. c. 8 years ago	Minimum f. c. today
(1) Aisles, elevators, storage	0.5 to 1	3 to 6	**5 plus**
(2) Churches, Auditoriums	1 to 3	2 to 4	**3 to 8**
(3) Department stores	3 to 7	7 to 10	**10 plus**
(4) Show windows	5 to 40	10 to 70	**15 up**
(5) Rough manufacturing	2 to 4	3 to 6	**6 plus**
(6) **Clerical work**	3 to 8	5 to 12	**10 plus**
(7) Fine manufacturing	4 to 8	6 to 12	**10 plus**
(8) **General drafting room work**	5 to 10	10 to 15	**15 plus**

From Industrial Daylighting, p. 5.

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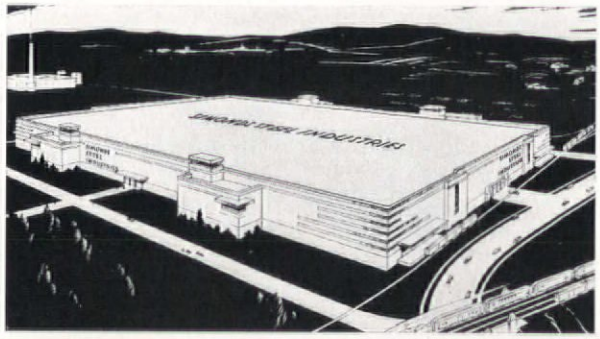
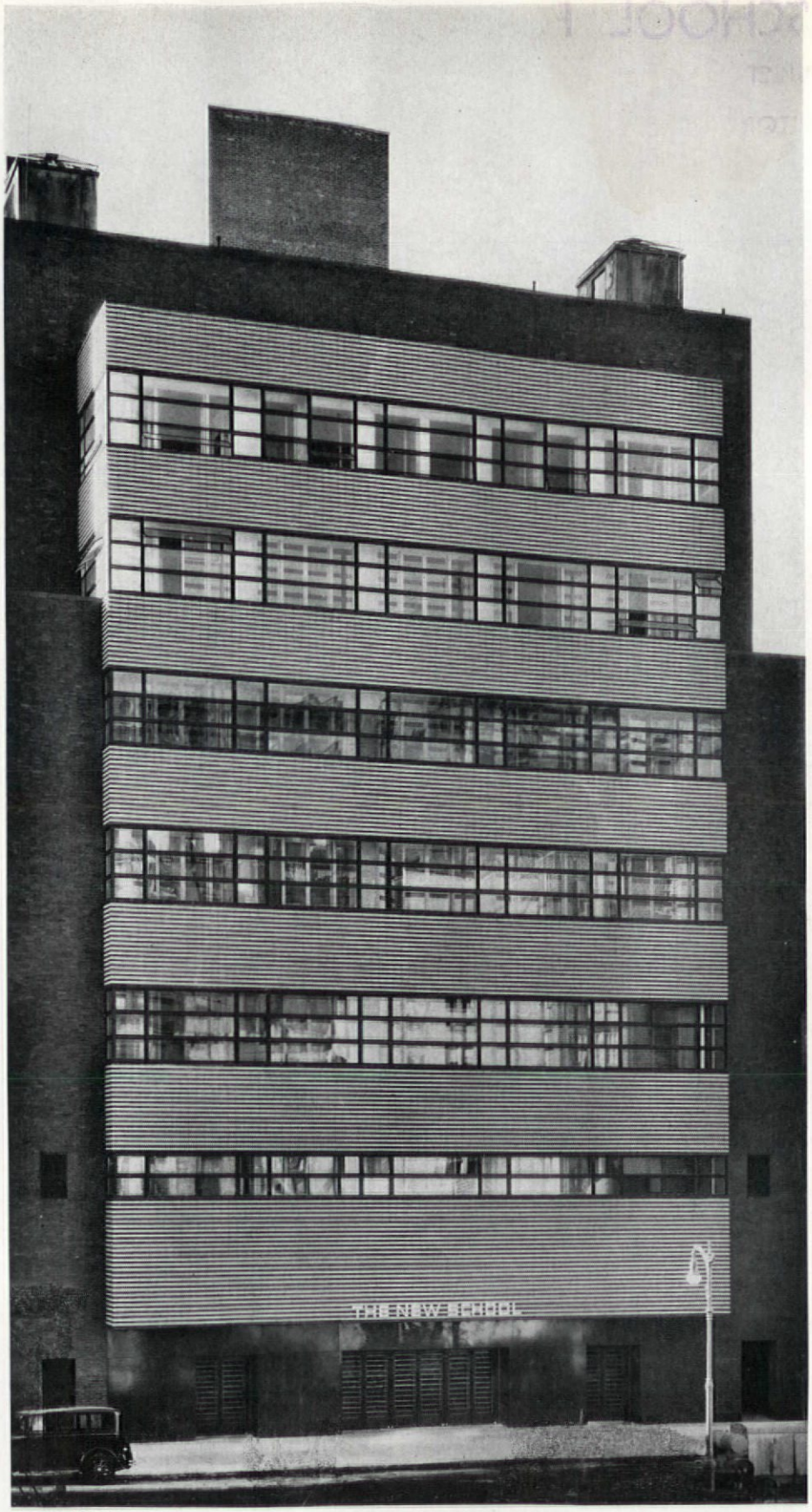
"Visual Performance under Daylight, Incandescent, Mercury Vapor, and Their Mixtures," by Kwan Y. Tang. A paper presented before the Twenty-fourth Annual Convention of the Illuminating Engineering Society, October, 1930.



Windowless Building now under construction for the Simonds Saw and Steel Company, Fitchburg, Mass. The Austin Company, Engineers and Builders. An attempt to attain lighting by artificial methods with intensities that do not vary. Mechanical ventilation is provided. It remains to be proved that the artificial atmosphere and lighting are equal in all respects to natural methods.

THE NEW SCHOOL FOR SOCIAL RESEARCH
NEW YORK CITY
JOSEPH URBAN, ARCHITECT



Nyholm and Lincoln

Elevation. Solid masses, mat black brick. Window spandrels, mat black and pale buff brick. Veneering round doors, Coopersberg black granite. Window frames, rolled steel painted black. Interior window frames and column surfaces generally carry the color of the rooms: sixth floor, white; fifth, yellow; fourth, dark blue; third, orange; at right, gray and blue; second, maroon; at right, gray-blue and deep blue; mezzanine, light orange.

THE NEW SCHOOL FOR SOCIAL RESEARCH

JOSEPH URBAN, ARCHITECT

J. H. TAYLOR, CONTRACTOR

By Shepard Vogelgesang

Plot dimensions: 103′ 3″ x 77′ 7¼″.
Height of building: 7 floors and basement.
Total cubage: 803,000 cu. ft.
Complete cubage costs including fixtures, decorations and furnishings, exclusive of two mural paintings: 65c per cu. ft.
Total cost, exclusive of land price: $500,000.

•

The New School was founded on the perception of the demand for adult mental occupation and expansion in an age which, among the machine products, has been rapidly fabricating leisure. The client, Dr. Alvin Johnson, is an educator of broad information and liberal ideas. His experiment was to give opportunity for following many interests in this leisure time. It met with a degree of success which demanded more ample housing. What he wanted of his architect was the embodiment of the school requirements—simply, technically and beautifully, within the economic means at hand. There was no question of recalling the past; the building was to function in the present and if possible to forecast the future. To these liberal assets he added the skill and enthusiasm of two outstanding progressive American painters, Thomas Hart Benton and Jose Clemente Orozco. Benton is a New Yorker whose work was well known for vigorous ability but never before adequately incorporated in a building. Orozco is a Mexican with the forcefulness and integrity which New York recognizes in the famous Mexican group but has been reluctant to provide with patronage. During the erection of the building the enthusiasm of the architect, the client and these painters communicated to everyone engaged in the work. Few buildings have opened with an equal air of suspense. Few buildings have ever had so much experiment and intense conviction at stake.

The organization in plan is concentration of the instruction facilities in the basement, ground floor and second floor; third floor—administration; fourth, fifth and seventh—research, exhibition and studio. The vertical circulations, elevators and stairs disperse upward traffic in two channels in parallel stacks on each side near the front of the building. The toilets and kitchens are also in tiers, opening on two sides on light shafts located toward the rear of the building.

For instruction in the dance a circular room with ballet rail is provided in the basement where Dalcroze eurythmics, ballet and round dances can be given. The first floor comprises the main auditorium seating 550 persons, and entrance lobby from each end of which all other floors are accessible by two elevators and stair towers. Above is a mezzanine with two galleries each accommodating 20 additional spectators, a projection room equipped for sound motion pictures and a bookstore. The second floor provides five class rooms, two accommodating 220 and 187 students each on ramped floors which parallel the curve of the auditorium ceiling. Classes are held for the most part in the evening so usual requirements of orientation to natural light were waived in favor of utmost economy in space.

On the administration floor the dome of the auditorium is echoed by the rise in level to the board of directors' room. This room is flanked by general office space and building superintendent's quarters. The central area on this floor is occupied by the reception room where the general public is accommodated. On one side of this room, across the front of the building, are the director's and assistant director's offices, each with a secretary's room, flanking a central office for the school clerk. On the opposite side of the room, across the back of the building, is the board of directors' room.

The fourth floor accommodates the library which connects through an open well by a double flight of stairs to a landing on the exhibition floor. The rear of the library is raised above the board of directors' room a few steps to the area allotted to book stacks and office space.

The fifth and exhibition floor is all on one level. Across the front and for two-thirds of the depth of the building is exhibition space. The remaining third is occupied by the students' dining room with a dining room for the faculty to the right and kitchen to the left.

The donor of the property has an apartment occupying the sixth floor which will eventually revert to the use of the school.

On the seventh floor is a wide, open room with a terrace to the front of the building. It is to be used as studio space.

Apart from affording the changes of floor level on the second, third and fourth floors, the auditorium,

Nyholm and Lincoln

THE NEW SCHOOL FOR SOCIAL RESEARCH
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JOSEPH URBAN, ARCHITECT

Detail of brickwork and windows. Black brick laid in mineral - pigmented black cement, buff brick jointed with buff cement.

with class rooms above, conditioned much of the plan. Its shape influenced the contour of the dance floor in the basement below it and the entrance lobby in front of it. Steel columns rest on the extremities of the girders which roof the auditorium. Throughout the building the void which it establishes in the centre of the structure is felt by the absence of columns and the openness of central space on each successive floor.

The side passages extending from back to front of the building provide fire exits from the rear classrooms above the auditorium as well as direct communication with the stage. Above the mezzanine these passages are covered by stairs and other extensions of the building.

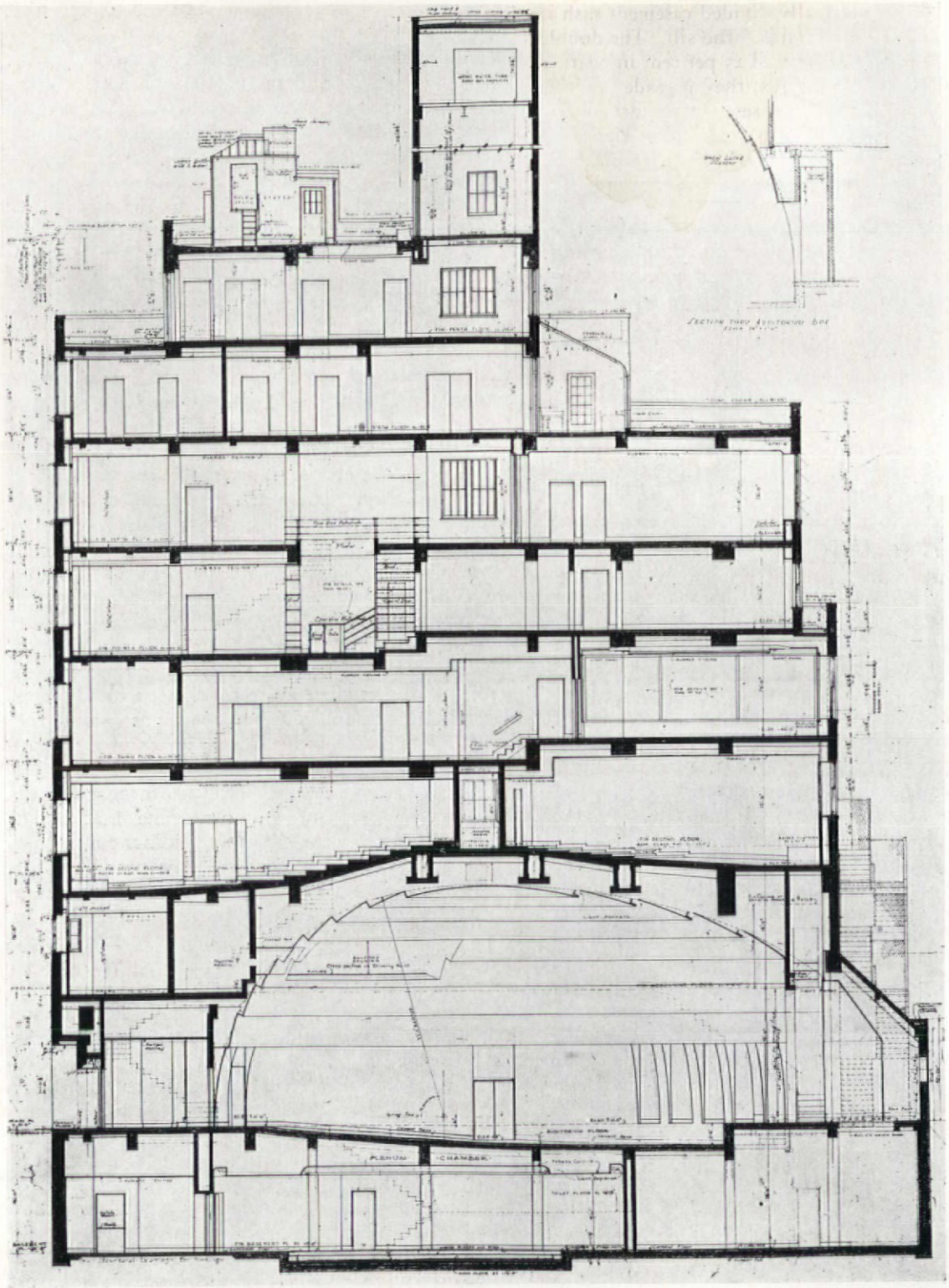
The auditorium occupies maximum space commanding good view of the stage. The domical cover, evolved as the logical enclosure to such a plan, provided location for the lighting scheme and also, originally, for the ventilating system. Adoption of a hung plaster ceiling 25 per cent perforated for acoustical reasons changed the ventilation scheme by permitting the use of the entire ceiling surface as a vent into the plenum chamber above. The auditorium functions acoustically like an open air theatre. The wood background of the stage and the folding wood curtains act as resonant reflectors for sound which is projected into the seating space and immediately absorbed through the ceiling perforations in the same way it would be dissipated in the air above an out-of-door stage. Right and left of the main stage are two side stages for choruses and music incidental to theatrical performances.

Professor Floyd R. Watson consulted on the acoustic problems of the room. The result in his estimation establishes a distinct advance in the science of acoustics which can lead to almost limitless possibilities in the variation of auditorium forms. In addition to the acoustic properties of the auditorium there is an interesting installation of electrical sound equipment to be connected by radio with the outside or used to transmit interior programs. A series of loud speakers makes possible giving music or speech simultaneously in the dance room, the auditorium and one of the upstairs classrooms. The main auditorium has also equipment at the speaker's desk which permits the amplification of a weak voice. The apparatus is controlled from one of the seats in the rear of the auditorium and possesses the remarkable quality of filling the room with uniform sound in such a way that no variation of intensity is noticeable between seats placed directly under the desk amplifier and seats in the rear of the room. In the center of the rear stage wall is a loud speaker horn 7 feet square which can be concealed by doors uniform with the stage walls. It is proportioned to the volume of the room and the stage. The shape of the stage further enlarges the trumpet action of the installation. Back of the rear stage wall is a sound chamber. In the peak of the stage chamber is a grille communicating back to the sound chamber. This connection acts precisely like the eustachian tube of the ear, equalizing air pressures on the diaphragm caused by varying volumes of sound. This device is essential when the sound box is separated from the room into which sound is projected. The large horn is also for use with sound motion pictures. A sound screen has been installed which can be lowered in front of the horn.

Beside the lighting apparatus and a floor trap there is no stage equipment, no gridiron and only such fly galleries as are needed to accommodate the motion picture screen with a velvet mat. Whatever scenery is to be used will be indicative of the mood, time and place of action, not pictorial. Two four-speed door sections opening in the middle supplant a curtain. The room functions acoustically without any curtaining usual to a theater. The only hangings are those in the side stage openings and at the back of the galleries. These are found unnecessary for sound purposes.

Since the building is to accommodate 2,000 students, additional sheltered sidewalk space in front of the entrances was a necessity. For this reason the entrance wall was set 3 feet back from the building line and the other stories were cantilevered out to the building line. As the site is on a narrow side street, windows were made continuous to admit as much light as possible. The building presents to the street a bay facade in horizontal bands of glass and continuous black and white brick spandrels enframed in the plain vertical black brick elevator and stair tower walls without windows. The mat black brick is laid up with ½″ mortar joints containing black mineral to provide a color as near black as practicable. The entrance is veneered with large slabs of black Coopersberg granite anchored to a common brick back wall; copings are mat-glazed black terra cotta. The soffit of the overhang is sheathed in bronze plates. Owing to the proximity of the elevator shafts it was impossible to eliminate the corner columns in the bay by cantilevering without excessive extravagance. The black and white brick facade batters one foot in its total height. This is accomplished by setting the sills a few inches back at each floor. The purpose of this device is to prevent the optical impression of the building leaning over the street, to rectify the tendency toward concavity in a line composed by joining vertical and horizontal members such as the window uprights and brick coursing. There is a slight addition to the quantity of light admitted to the interior by sky reflection which the backward cant emphasizes.

The exterior windows are specially made steel sash, the top and bottom units of each bay of the projected type, the other units fixed. The steel sash is set on the exterior face of the building. On the



THE NEW SCHOOL FOR SOCIAL RESEARCH
NEW YORK CITY
JOSEPH URBAN, ARCHITECT

Contour of the auditorium dome provides, in the main classrooms above it, change of level which at the rear of the building continues through the third and fourth floors.

interior a second vertically divided casement sash is set flush with the inner face of the sill. The double windows allow a reduction of 25 per cent in heating costs for these window areas; they provide effective insulation against street noises. The width of the sill between windows permits the window cleaner to pass between the sash and reach all glass surfaces. The vertical articulation of the inside casements is also necessitated by the window cleaning problem. In the students' dining room the projected type of sash provides 100 per cent ventilated area and allows the decoration of an area of center wall which with double hung or other partially ventilating types of windows would have been lost.

Direct radiation from heaters located generally under the windows supplies the heating of all rooms, except the entrance lobby where a hot blast recirculating system is used. The boiler is oil burning, operating at 0–15 pounds pressure. Condensate is returned to the boilers by vacuum pump. Separate supply and exhaust ventilating systems provide ventilation to the basement dance floor, the auditorium and two main classrooms. Unit ventilators of the recirculating type with fresh air inlets from out of doors supply the other rooms. The basement toilets are in separate exhaust systems while gravity exhaust ventilates the kitchen range hood and interior toilets.

Only the basement plumbing fixtures are on an ejector, the remainder of the sanitary system is gravity flow from the roof tank.

Lighting is designed mainly for a pleasant distribution of illumination where required. Most of the fixtures are of built-in design. Where cost prevented installation of ceiling boxes simple triangular fixtures, bulb and socket fixtures, hanging reflectors and circular metal domes with flat diffusing glass plates were designed. Each of the two mural artists has a different scheme of illumination. That in the board room decorated by Mr. Benton throws all the light on the murals, leaving the center portion of the room to be illuminated only by light reflected from the walls. In the students' dining room Mr. Orozco's desire was for general illumination which gave equal importance to all objects in the room without emphasis on the murals. He wished by this method not to exhibit the paintings as decorations but to keep them as much as possible a part of the life of the room. The lighting of the auditorium is designed to place dramatic emphasis on the stage. Four rings of the dome carry lights in reflectors, the upper ring 20 100-watt lamps, below it 32 100-watt lamps, and 40 60- and 48 50-watt lamps each. The stage equipment consists of three panels of four colored lights, red, blue, amber and white, each color having a capacity of 8000 watts. Four spots located in stage wings, two arcs in projection booth. One panel is over the proscenium, the others are in the side stages; all are hung on pipe battens. The entire auditorium lighting equipment is controlled from a room at the extremity of the left side stage by Vitrohm continuous duty dimmer plates of interlocking type. There is a master lever for the auditorium ceiling lights and a master control of 110 steps for each section including the balcony lights. The electrical energy supplying lighting to the building is 4 wire 120/128 volts. The entrance lobby and dance floor are completely cove-lighted; in both rooms the lighting follows the ceiling contour with the addition in the basement of a rectangular cove over the dance floor. These examples of strip and cove lighting taken with the illuminating system of the auditorium contribute the newest uses of architectural lighting to be seen in the building.

Light and power are operated generally separate and are connected with a main distribution board.

Color has been extensively used in the building. Behind the glass of the facade is visible part of the color scheme. It shows in blocks of red, blue, green, yellow, orange, white, purple, brown, dark blue, as it occurs in the rooms behind the glass. The gamut of color is for the most part strong; a few pale yellows are used, no reds darker than an English vermilion but a variety of greens, blues and browns, all the way to black. The total is ninety colors including white. The use of color has had various purposes in different rooms, governed generally by principles of lighting; cool colors in shadow; warm colors in light; large areas of color of high reflecting power against smaller areas of colors with high absorption to even out the illumination of the rooms. Beyond these principles of application are other considerations, balance of accent, focusing attention at a desired point in the room, maintenance of a diagrammatic scheme to add to the legibility of planning where needed, and selection of colors for their emotionally reactive values. By confining color to the actual planes of the building accenting structural features—columns, for example, are generally kept white—architectural values are enhanced and color given its proper function in building. The ceilings and walls, where not exposed to wear, are executed in a new casein matt paint; the remainder of the work is oil stippled flat except where staining is used on cork or woodwork.

Nyholm and Lincoln

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Staircase between library floor and exhibition and dining floor. Library ceiling, deep blue; plane under right and left balconies, gray; wall back of stairs, light chrome yellow; exhibition floor walls, gray; ceiling and columns, white. Maple trim, black, showing wood grain slightly.

Nyholm and Lincoln

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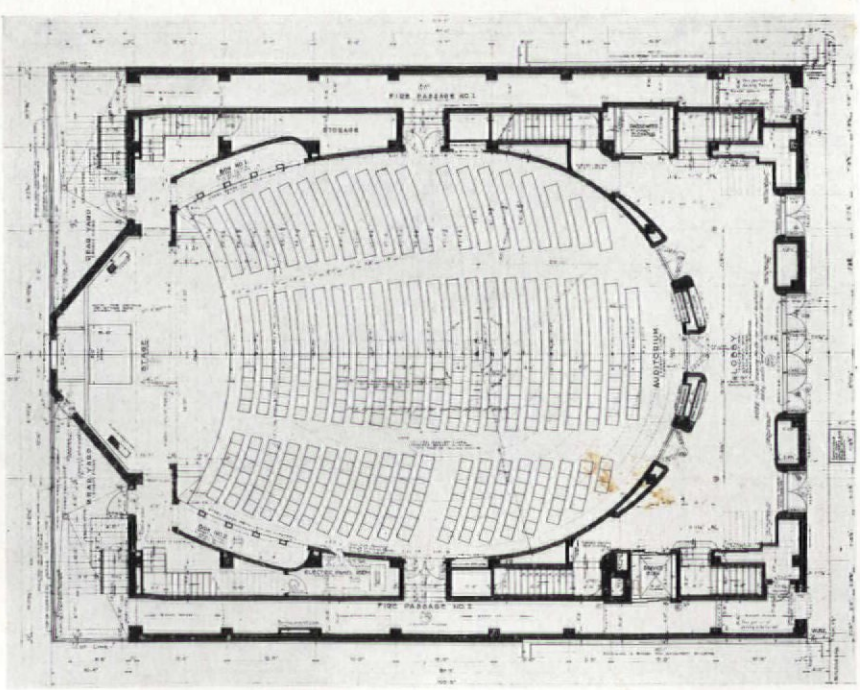
Entrance lobby. Ceiling lighting surface, white Sunflex paint; ceiling surface and over doors, black Sunflex; end walls, burnt sienna oil paint; vent and pipe chase surfaces, white oil paint; metal work, gun metal finish oxidized bronze; floor, black and white terrazzo laid in bronze strips.

Nyholm and Lincoln

Auditorium. Hung plaster ceiling 25 per cent perforated to produce acoustic conditions similar to those of an open-air theater. Main stage opening closed by two 4-speed doors; stage cyclorama and side stage walls built of maple with one thin coat of white paint to aid in reflecting colored lighting. Walls, gray Sunflex graded in nine tones to top of ceiling; proscenium and ceiling reveals of English vermilion; carpet to match; chair seats, dark gray; seat backs and stage doors, black.

FIRST FLOOR PLAN



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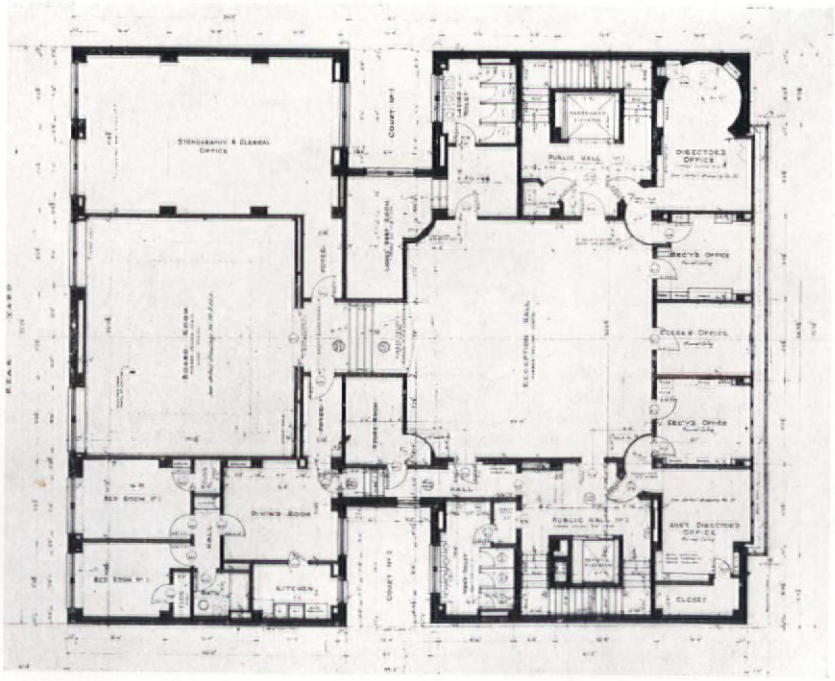
Nyholm and Lincoln

Board of directors' room. Murals by Thomas Benton. Ceiling, terra cotta Sunflex; lighting fixture, opal glass; moldings, aluminum leaf wainscot; doors and tables, black eggshell finish lacquer; floor varnished maple; curtain material, cerulean blue.

THIRD FLOOR PLAN



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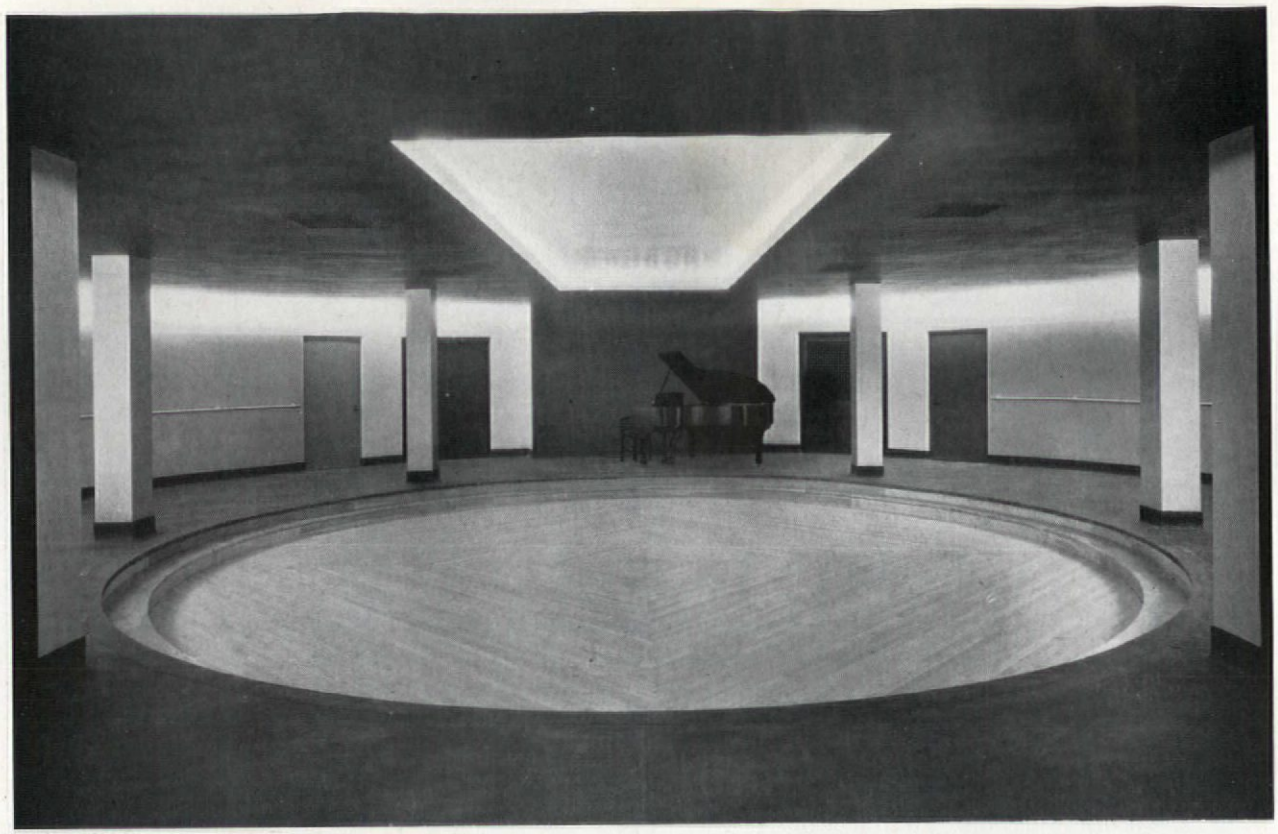
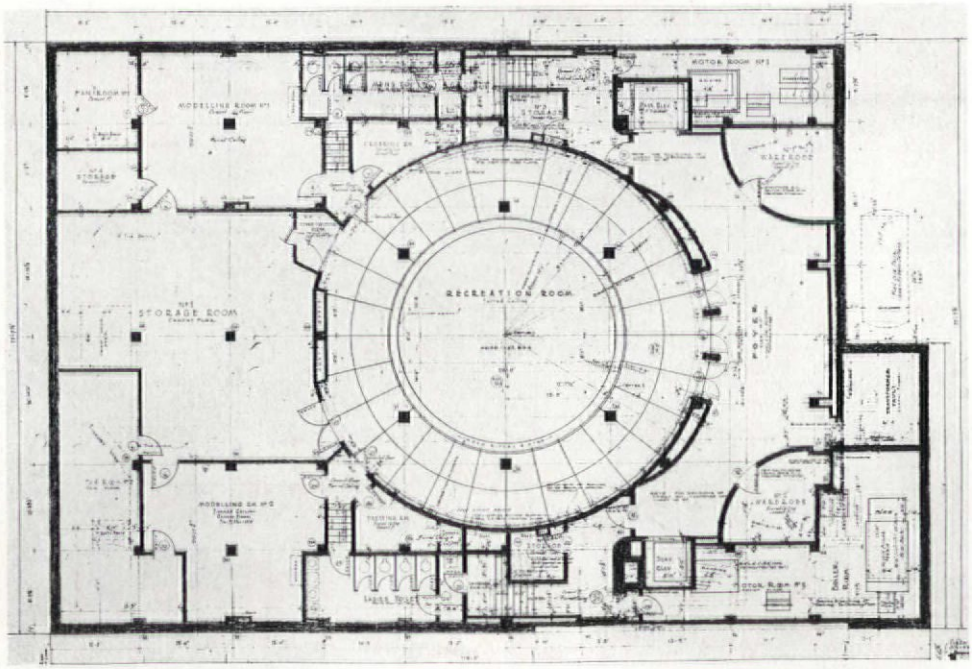


Nyholm and Lincoln

Dance floor. Dancing surface, varnished and waxed maple; surrounding floor, dark blue Marbleoid; ballet rail, aluminum; ceiling, black and white Sunflex. Walls, deep blue, citron, English vermilion, emerald green, orange, ochre, cobalt blue, delft blue; rectangles in flat oil paint; columns, brushed aluminum paint.

BASEMENT FLOOR PLAN



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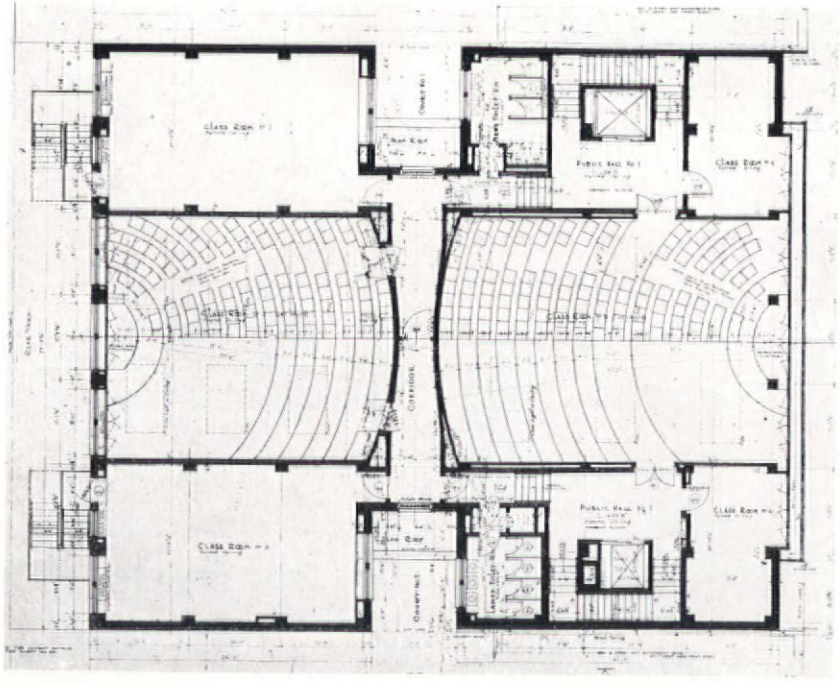
Nybalm and Lincoln

Main front classroom. Pale yellow ceiling; window wall, gray-blue; curtains, indigo blue; columns, white; side walls, deep green-blue; doors, pale chrome yellow; strip over door to back of room, white; strip below, deep orange; rear wall, gray-blue.

SECOND FLOOR PLAN



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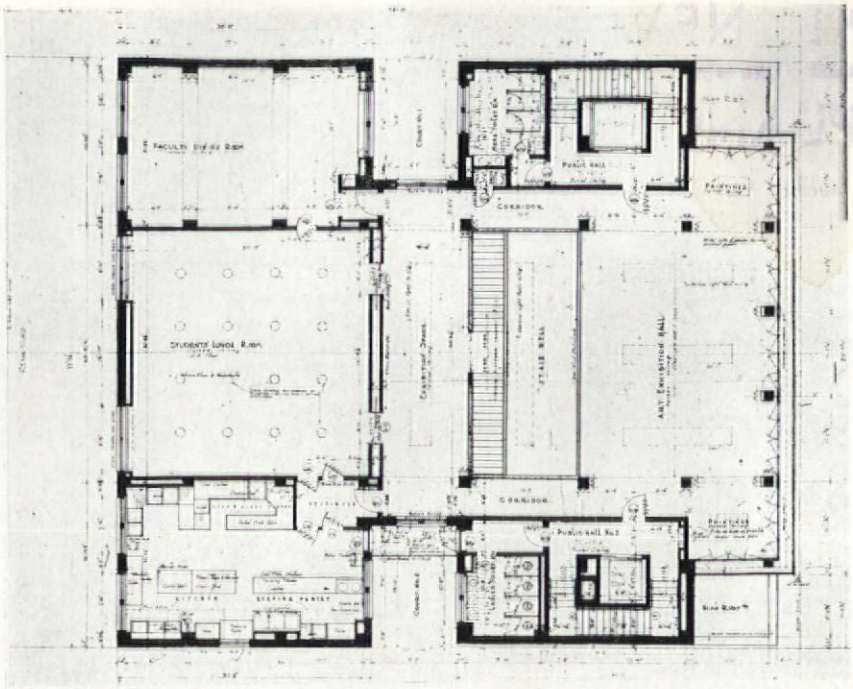
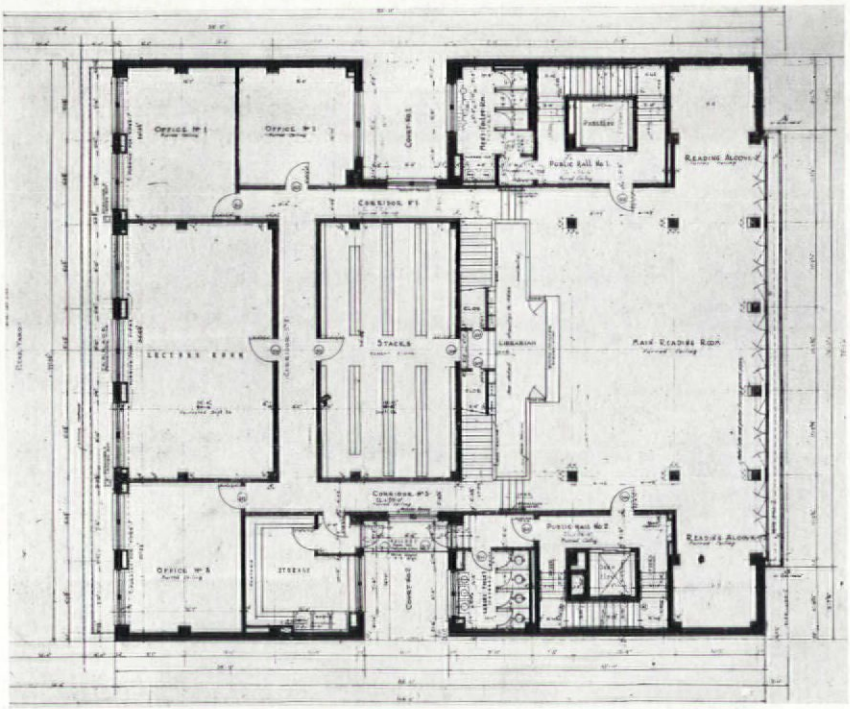


Fifth floor plan: front, exhibition space; rear, students' lunchroom, faculty dining room, kitchen; center, stair well down to library.



Fourth floor plan: front, library reading room; rear, temporary office space for later stack room extension; center, stack rooms and stair well to fifth floor.

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JOSEPH URBAN, ARCHITECT

STADIUM PLANNING

By MYRON W. SERBY, Stadium Consultant

Stone from Galloway

MEMORIAL STADIUM, UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA
JOHN GALEN HOWARD, ARCHITECT
E. E. CARPENTER, CONSULTING ENGINEER

© *Aerial Photographic Service*

TEMPLE UNIVERSITY STADIUM
PHILADELPHIA
CLARENCE E. WUNDER, ARCHITECT AND ENGINEER

Suburban location permits additional playing fields and ample parking space for automobiles.

STADIUM PLANNING AND DESIGN

By MYRON W. SERBY

The average stadium has a seating capacity of 5,000 to 20,000. There are about forty large stadiums seating from 20,000 to 125,000 in the United States. Of these, twenty-two are owned by educational institutions, twelve by professional baseball clubs and six by municipalities. The first of the large stadiums was built at Harvard, followed by stadiums at many other educational institutions. Organized baseball then found it necessary to provide for the increasing multitudes of interested baseball fans. These stadiums came into being through virtual necessity and their immense earning capacities were assured at the outset.

Municipalities are slowly awakening to the public need for adequate stadiums. Where conditions are favorable, stadiums are "gilt-edge" business propositions yielding a high return and will continue to draw their enthusiastic multitudes long after they have paid for themselves. The recent development of night illumination brings the stadium into our national life as a means of recreation for the general public, equal in importance to radio, motoring, moving and talking pictures.

There are about 1,300 cities with populations of 5,000 to 25,000; 225 cities with 25,000 to 300,000; and 27 cities with populations over 300,000. It is evident that the six existing municipal stadiums should serve as a nucleus for a tremendous development in this field in the near future.

PLAY AREAS

All that space within the stadium allotted to the use of the players or performers for a given athletic game or contest is referred to as the play area. This area includes the space within the official boundaries together with sufficient clearance outside the lines for out-of-bound plays.

Football

Football, according to the rules of the National Collegiate Athletic Association, is played upon a rectangular field 360 feet in length and 160 feet in width. Goal lines are established in the field of play 30 feet from and parallel to the end lines. The goal posts are placed 18 feet 6 inches apart in the middle of each end line; they should exceed 20 feet in height, with a horizontal cross bar 10 feet from the ground.

A minimum clearance of 20 feet is allowed outside the official field of 360 by 160 feet. Thus the minimum football play area is 400 by 200 feet. All the area beyond these dimensions is available for spectators.

Baseball

In practice football fields are laid out in close conformity to the official rules. This is not the case in baseball, in which playing fields used by professional clubs vary from the rules in many particulars. According to the Joint Playing Rules Committee of the National League and the American League, amended by the National Joint Rules Committee of Professional Baseball:

"The ball ground must be enclosed. To obviate the necessity for ground rules, the shortest distance from a fence or stand on fair territory to the home base should be 235 feet and from home base to the grand stand 90 feet."

Home base and first, second and third bases are at the corners of the 90-foot diamond. In the junior diamond for boys under 16 years of age the base distances are reduced to 82 feet.

A strict interpretation of the official rules would provide for the playing field a quadrant with a radius of 235 feet, but the long sides, referred to as left and right foul lines, must be greater than 235 feet in order to increase the difficulty of batting home runs. The home run due to short foul lines is now the subject of much agitation in organized baseball. The lively ball is also involved in this discussion. A study of the fifteen major league park measurements indicates that four have short left foul lines with longer right foul lines. Ten have short right foul lines. One has foul lines of equal length. The practice of providing one long foul line is explained by the fact that most ball parks are also used for football.

The following figures will show the range of foul lines in use:

Short foul lines		
Maximum	365 feet	Boston Nationals
Minumum	258 feet	N. Y. Americans
Average	315 feet	(15 parks)
Long foul lines		
Maximum	402 feet	Boston Nationals
Minimum	280 feet	N. Y. Americans
Average	353 feet	(15 parks)

In addition to the wide departure of foul line distances from the rules, the distance from home base to the grandstands is often as short as 60 feet instead of the 90 feet required. The reason, of course, is to

improve the view by bringing the playing field closer to spectators who are usually massed near the diamond.

One authority, in order to provide for greater uniformity in the layout of future baseball grounds, has suggested that the rules be amended as follows:

"To obviate the necessity for ground rules, the right foul line distance shall not be less than 300 feet nor more than 315 feet; the left foul line distance may be equal or greater than the above. The distance from home base to the grandstands shall not be less than 60 feet nor more than 90 feet."

The above suggestion conforms closely to actual conditions and should produce satisfactory baseball play in professional or amateur games. The 60 feet clearance behind home base may follow the arc of a circle with center at home base, thence following a tangent to this circle to an offset of 20 feet at the ends of foul line distances. This gives a play at the ends of foul line similar to that at the Yankee Stadium with a minimum length of 410 feet and width of 426 feet.

It is apparent from the above dimensions that whereas football play areas can be contained within baseball play areas, the reverse is not the case.

Track and Field Athletics

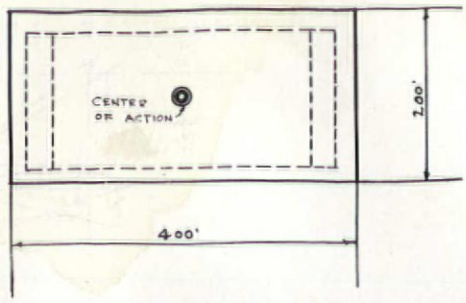
This phase of athletic competition is governed by the rules of the following:

Intercollegiate Amateur Athletic Association.
Amateur Athletic Union of the United States.
American Olympic Committee.
National Collegiate Athletic Association.
National Committee on Women's Athletics of American Physical Education Association.

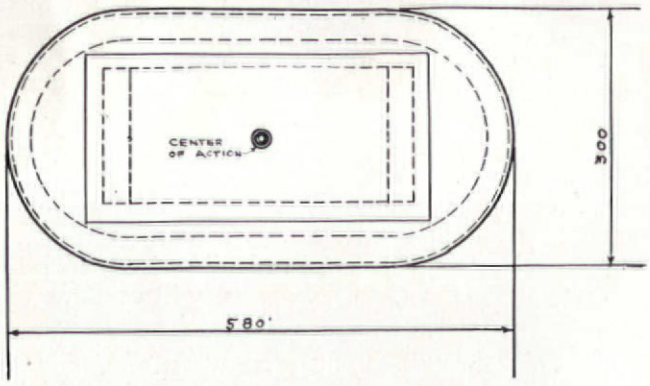
Track and field athletics originate from early Greek times, when stadiums were built to accommodate the crowds attending the sacred ceremonies of the Olympic games. In modern times these competitions are of international as well as national importance. While not so remunerative as football and baseball, no stadium is complete without a running track for track athletics.

Running tracks are built in connection with football and baseball stadiums. Accompanying diagrams give data for laying out tracks around football fields. With an inside clearance of 12 inches, the inner perimeter of the track layout is one-quarter of a mile, extensions of one or both sides being made for 220-yard straightaways. The oval with 225-foot tangents and relatively long radius is similar to that at Franklin Field stadium in Philadelphia. This is one of the best and fastest tracks in the country, the scene of many records. The oval with 350-foot tangents approximates the dimensions of the Ohio State stadium. Between these two extremes considerable latitude exists as to choice of dimensions. In general, ovals with short tangents and long curves are more satisfactory.

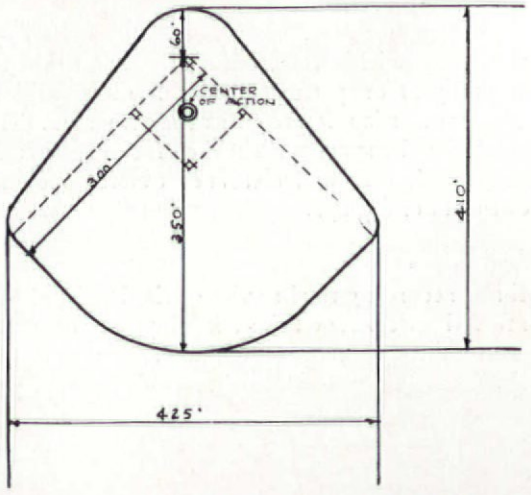
In layout of tracks associated with baseball fields



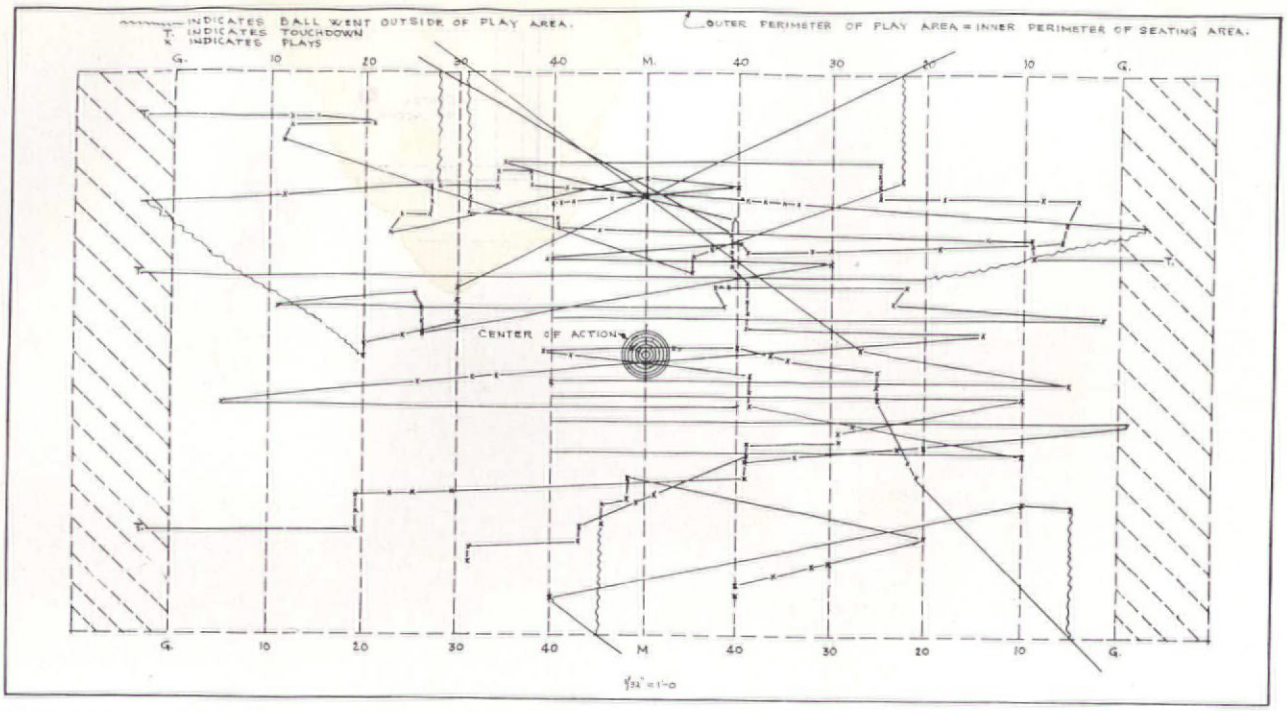
The minimum football play area is 200 by 400 feet, allowing 20 feet clearance beyond boundaries of official field.



A typical play area for football and track athletics. The track tangents may be extended for 200-yard straightaways. This is the usual layout hitherto used in educational and municipal stadiums. Official baseball cannot be played in this play area layout without ground rules, thus reducing greatly the usefulness and income value of the stadium.



The minimum baseball play area with 300-foot foul lines of equal length and 60 feet to 20 feet clearance at foul lines. All the space outside the perimeter is available for seating accommodations.



FOOTBALL ACTION LINES, NOTRE DAME-UNIVERSITY OF SOUTHERN CALIFORNIA GAME, 1930

it is impracticable to use oval tracks. The track layout must conform to the shape of the play area or the play space available. Hence such layouts are pear-shaped as in the Yankee Stadium, rectangular with rounded corners, or circular with a 100-yard straightaway across the field. Moreover, when conditions require, the lap distance may be reduced to one-fifth of a mile.

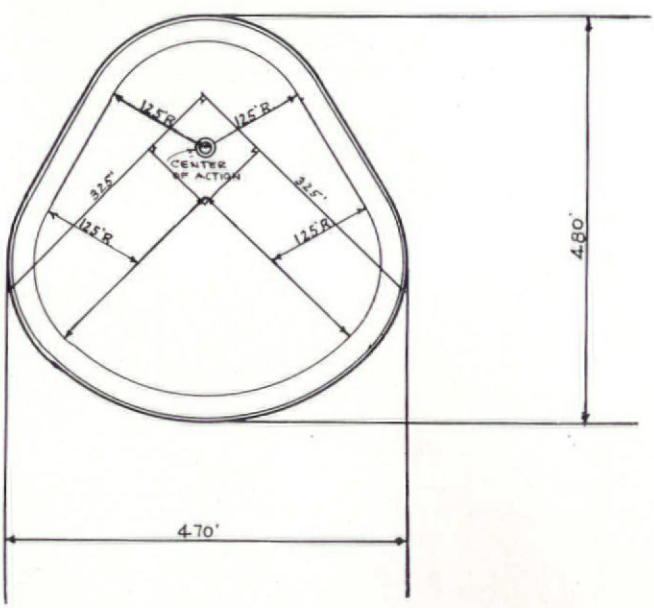
The problem of laying out running tracks in connection with baseball fields is one that requires careful study for each individual stadium, and with the necessity for providing good view, in so far as spectators are concerned, is one that will challenge the ingenuity of the stadium designer. A running track of any shape or distance is better than nothing at all; regardless of lack of conformity to the usual layouts such a track will add greatly to the usefulness of a stadium.

Other Attractions

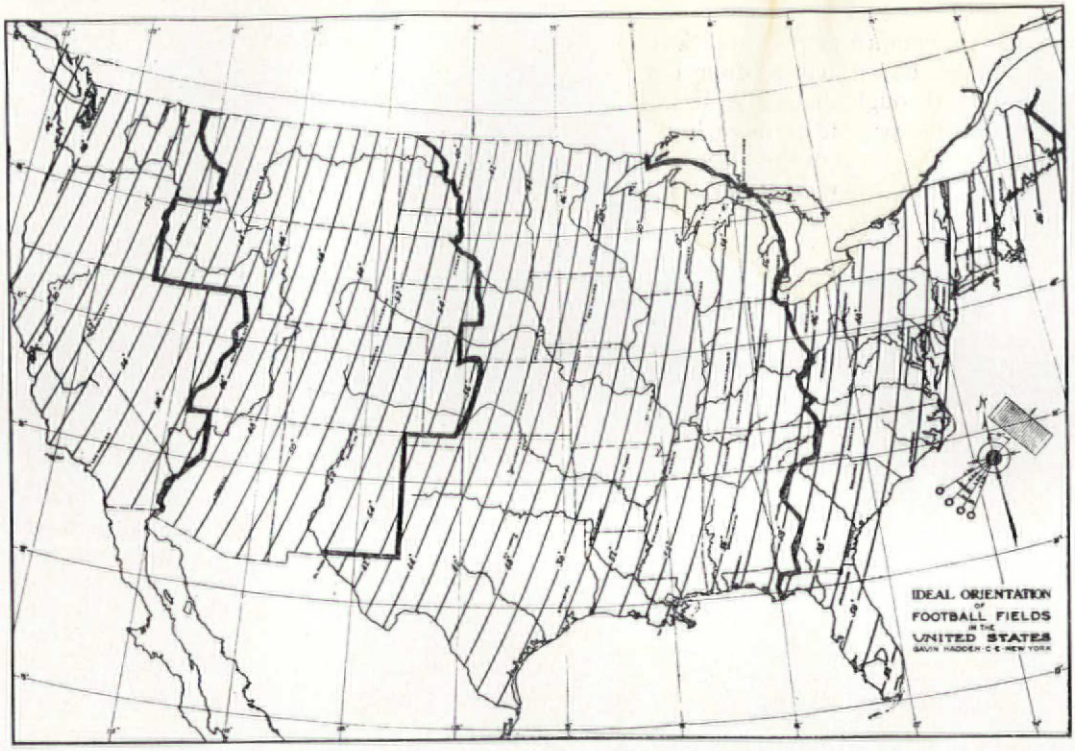
The game of soccer or association football is similar in field requirements to that of football. Hence the football play area will accommodate soccer as well.

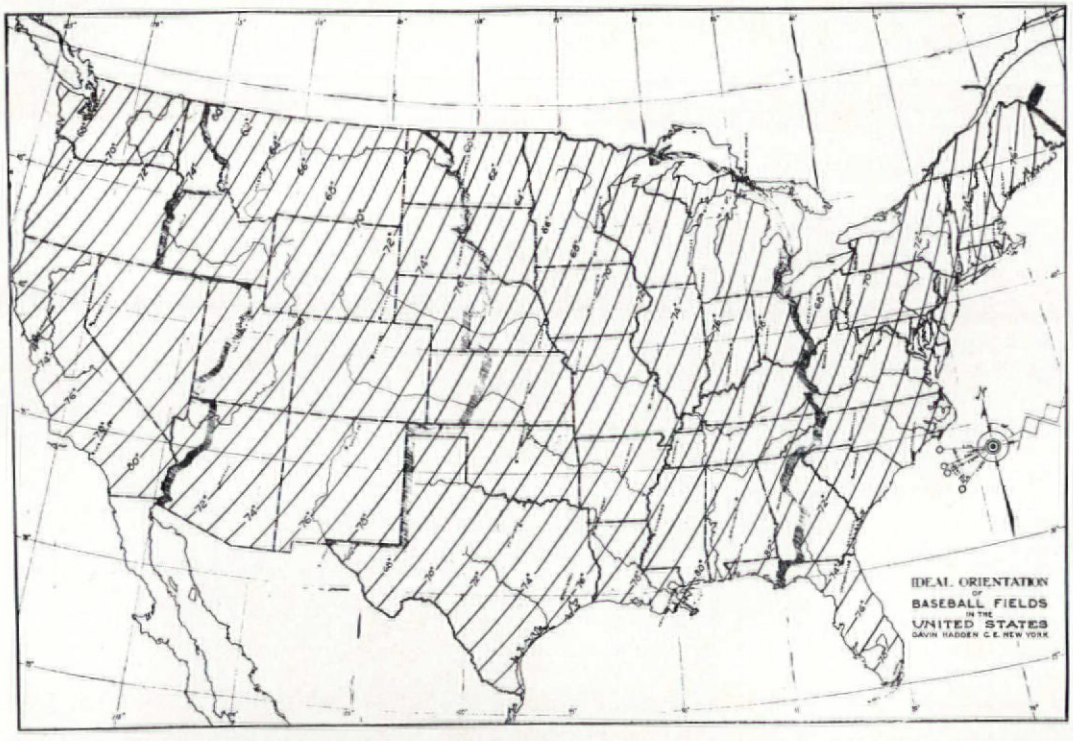
If provisions are to be made for exhibiting boxing and wrestling the space necessary for the performers is easily provided. A clear space of 30 feet square is required. The ring is elevated about 4 feet above grade. The greatest difficulty arises out of the necessity for providing good view, especially in behalf of ringside spectators. Good view is also a major consideration when the stadium is used for concerts, lectures, tennis, and the like.

Sketch illustrates locus of action points during a football game. The center of action is in the center of the play area.



Egg-shaped play area for baseball with one quarter mile running track. The tangents may be extended for 220-yard straightaways. This layout may be used for baseball, track athletics, and football.





IDEAL ORIENTATION OF FOOTBALL AND BASEBALL FIELDS

These maps, developed by Gavin Hadden, engineer, determine at a glance the ideal direction of the minor axis of football fields, based on a playing period from 2 p.m. to 4 p.m. between September 27 and November 27, and of baseball fields, based on a period from 3 p.m. to 5 p.m. between March 21 and September 21. Two choices of orientation are possible for baseball fields, as shown on the map to the right of the north arrow.

Orientation

Orientation refers to the azimuth of play area axis. The axis or center line of the football stadium is a longitudinal line passing through the goals. In the baseball stadium it is a line passing through home base and second base. The azimuth of this line or its angle with the true north is the orientation of the stadium.

Orientation concerns the effect of the sun's direct rays on public and players. During the summer months this matter is of prime importance in baseball stadiums. In major league baseball stadiums where the bid for public patronage is supported by careful provisions for the comfort and convenience of patrons, the better seats are shaded by proper orientation and roofs. With the exception of batter and catcher, the players must "take the sun."

Careful computations are required to determine the correct orientation to meet local conditions. For amateur games experts heretofore have considered mainly the comfort of players. This is a matter for careful consideration, for it is always possible to average the discomfort by shifting the glare to a portion of the seating area.

As football is a fall-season attraction the sun is usually welcome, especially near the end of the year. In ordinary cases the axis should be at right angles to the sun's azimuth. At 3 o'clock for the larger part of the United States the sun's azimuth is due west. Hence the football field axis is approximately north and south.

Drainage

Good drainage requires provision for both surface and underdrainage. Run-off by surface drainage is provided by grades of one-half to three-quarters of 1%. Such grades drain moisture quickly to inlets, gutters, blind drains and sewers. Where moisture cannot drain directly to gutters, open vents or vertical tee inlets to drains or sewers may be used. These may be provided with removable tops, rubber-capped, which are kept in place only during games.

The function of underdrainage is to remove excess moisture from the subsurface between rains. Good underdrainage means a porous soil texture which will absorb precipitation. The drains draw off this moisture and lower the water line, the result producing what athletes refer to as a "springy" field in contrast with hard playing fields which are troublesome to their legs.

For average conditions underdrainage should consist of 6-inch drain tile lines on 50-foot centers, properly connected to sewers. These are minimum requirements. It is advisable to secure expert advice from consultants familiar with local conditions.

Surfaces

Play areas are finished mainly by seeding and sodding, with cinder finish for running tracks and bare or "skinned" areas for base lines of baseball diamonds. The diamond consists of a flat turtleback or very low pyramid, with the four bases at the same elevation and the pitcher's mound elevated 12 inches or more above the base lines. This grading insures rapid surface drainage of the diamond.

An excellent play field for football is prepared by placing a 10-inch layer of cinders over the entire field, to be covered with another layer of sandy loam, and finished with blue grass sod.

A very good running track consists of a 12-inch layer of cinders under a 4-inch top layer of one part clay and three parts ¼" screened cinders, the running track of 21-foot width being pitched 2 inches toward the inner edge. The wearing surface is a ½" dressing of ¼" screened cinders, all to be thoroughly compacted by rolling. In some localities local crushed shell is used in place of cinders.

Combination Play Areas

The football season includes the three fall months. Track and field athletics occur during the spring. Baseball is played the six months of spring and summer. Thus the football season follows baseball, the two combining to provide a continuous season of outdoor athletic competition during all that period when outdoor attractions can be exhibited under weather conditions prevailing in the more densely populated sections of our country.

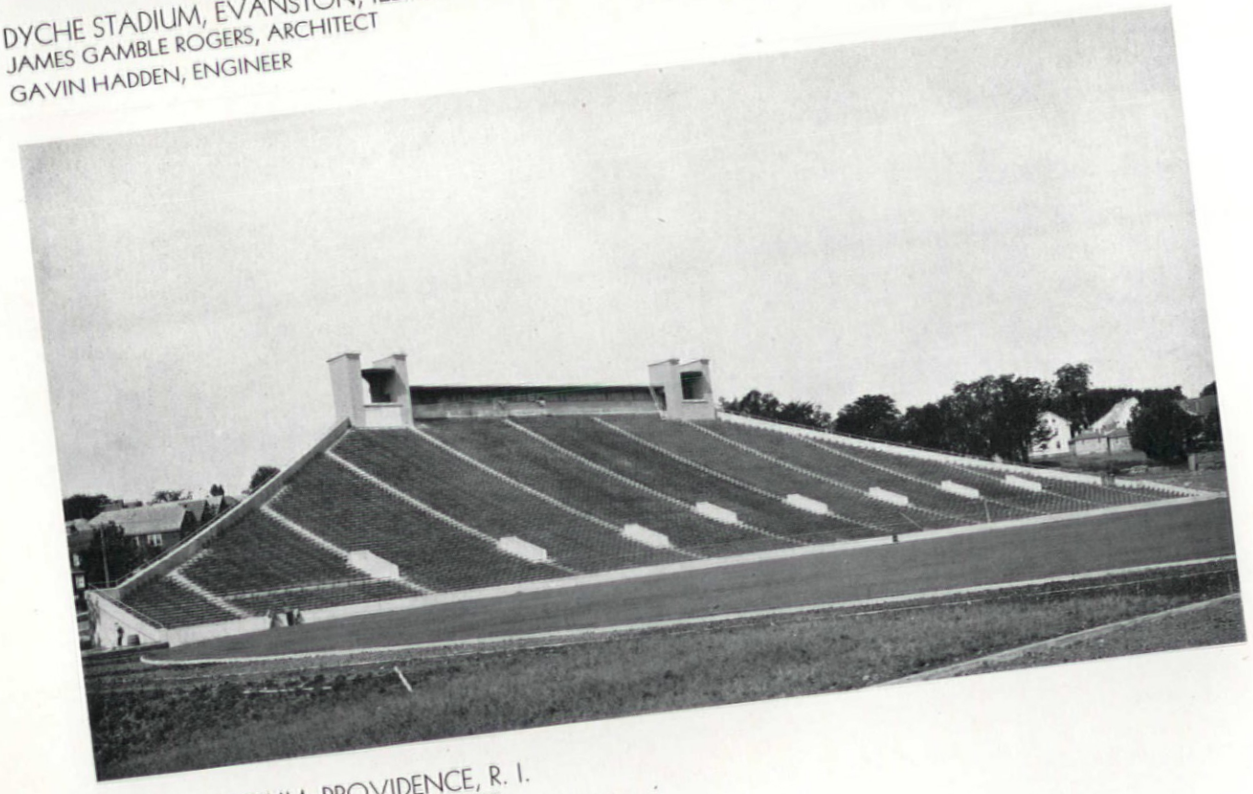
Football attracts approximately fifteen million attendance during its three months of play, while baseball in six months draws about twenty-five million. These estimates include all games—professional, collegiate, scholastic and local.

It is evident that both games are of approximately equal national importance and that stadiums designed to attract large crowds should provide adequate play area layouts for these games. The economy of designing a stadium to accommodate players and public for both football and baseball is obvious. Since the baseball play area is larger than the space for football, it is necessary to fit the football area into the baseball field, providing removable seating where needed, to adjust the seating area to the respective games. Good view is of fundamental importance to spectators and ample unobstructed play area is needed for the players. If baseball or football play occurs over the running track, the regulation track curbs may be omitted and the track graded continuous with the playing field.

SEATING AREAS

The seating area is the part of the stadium allotted to the spectators. This area is built generally as an ascending series of seat tiers.

DYCHE STADIUM, EVANSTON, ILLINOIS
JAMES GAMBLE ROGERS, ARCHITECT
GAVIN HADDEN, ENGINEER



BROWN STADIUM, PROVIDENCE, R. I.
PAUL P. CRET, CONSULTING ARCHITECT
GAVIN HADDEN, ENGINEER

Stands and Bleachers

By stands are meant that type of seating in which the entire deck construction is solid, the risers serving structurally to carry loads to inclined stringers and thence to columns and foundations to which the support framework is permanently attached. In stand construction the seats are fastened to treads or risers.

The term bleachers refers to that type of seating in which the riser space is left open, the load burden resting entirely upon treads which transmit loads to inclined stringers. Knockdown or portable bleachers are designed for easy dismantling for storage or removal to another location. Permanent bleachers are securely fixed to foundations. In bleacher construction the seats are fastened to the inclined stringers.

Permanent bleachers are used for seating when sufficient funds are not available for better construction. Portable bleachers are useful in providing extra seats for big games. They are necessary in the adjustment of the seating area in combination play fields. The best makes of bleachers are designed with structural steel support framework and wood treads, which should not exceed more than a 5-foot span between stringers.

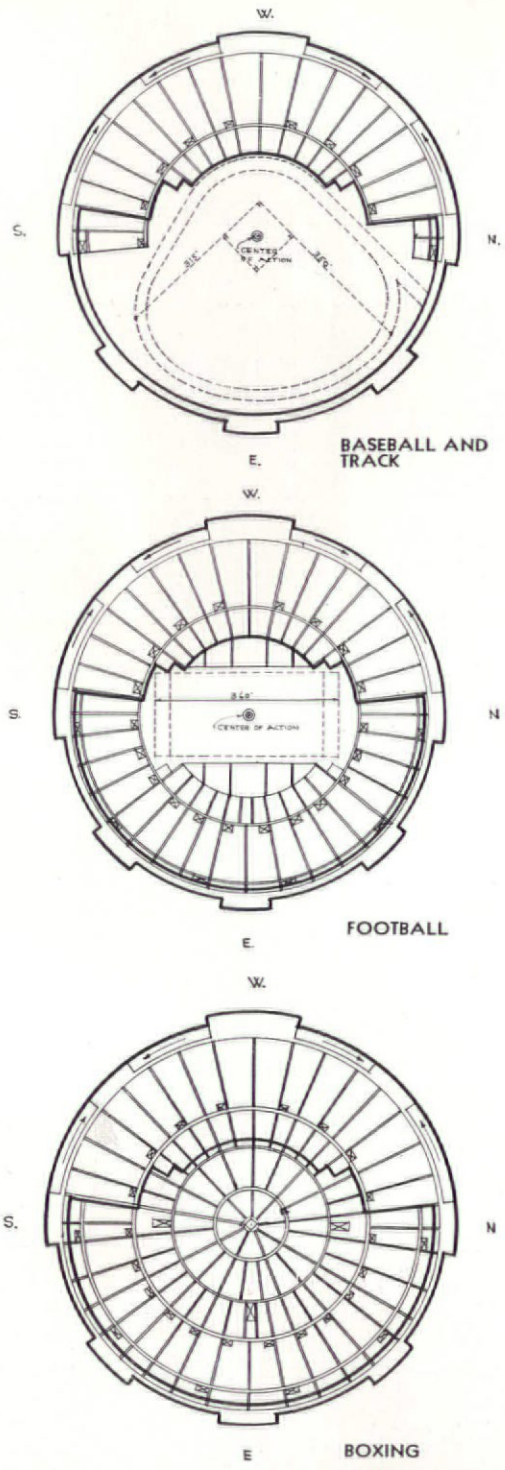
Stand decking may be built on an inclined cut or fill. When stands are roofed over, they are referred to as grandstands.

Stand Construction

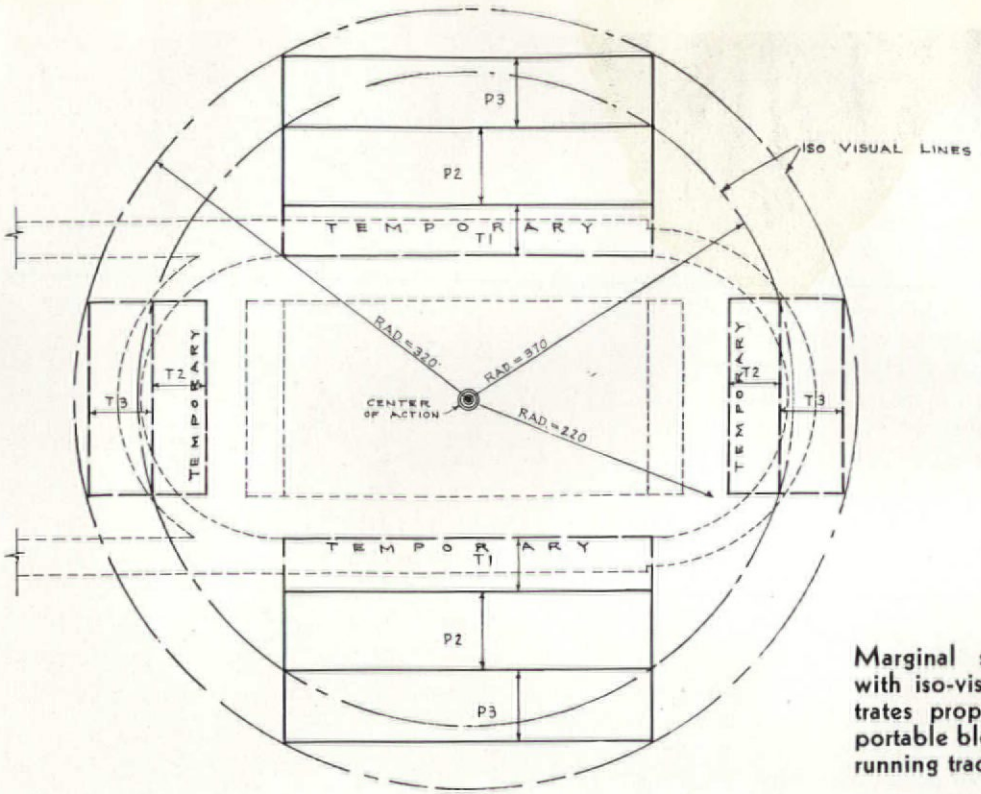
The important factors in stand construction are seats, railings, facade, decking, support framework, fire resistance, stability, weather resistance, erection, and true cost.

Seats. Commercial seating may be purchased from several large manufacturers who specialize in this work. These seats are fastened to the decking. They are often used for box and reserved sections of baseball stadiums and average about three dollars per person. This cost may be reduced by the use of built-up seats, which are attached to risers or treads. Comfortable seats are provided with backs and should be about 18½ inches in width. There should be ample leg room by allowing about 30 inches between rows. Sharp points that catch and tear clothing should be avoided. If seat brackets are attached to risers, the cleaning-up-after-games task is greatly facilitated.

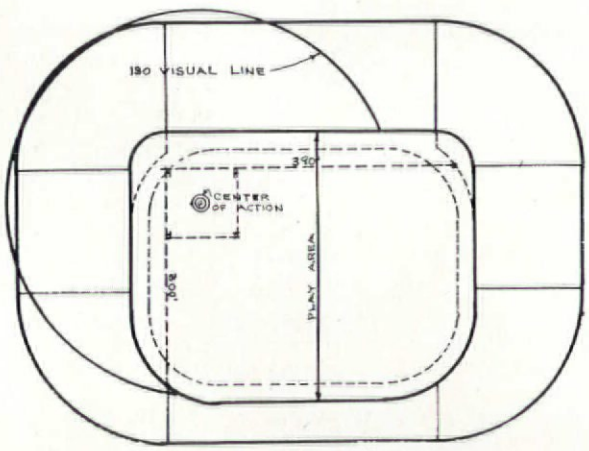
Railings. Solid masonry railings are expensive and cut off light and ventilation. Pipe railings are more desirable. With wire mesh panels, they are placed around the outer perimeter and around vomitories. Double or single railings are needed at the inner perimeter and for separation of the various seat classifications. Mesh is usually 8-gauge crimped wire with channel or round frames. Pipe is 1½" to 2" with threaded or welded connections, preferably the latter.

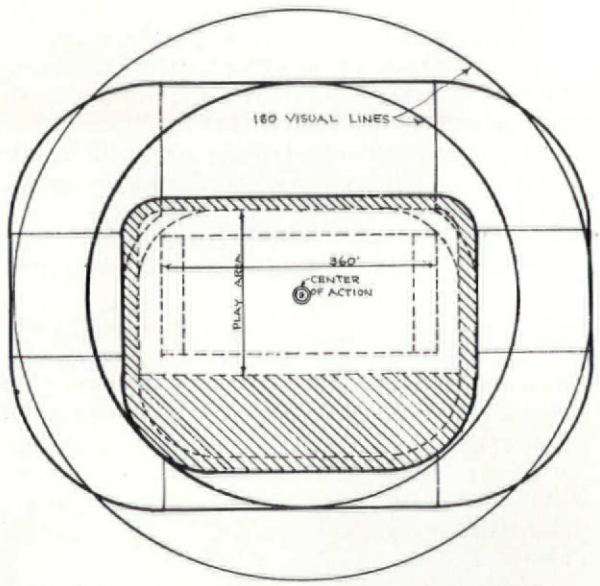


Municipal combination stadium designed for baseball, football, track athletics and boxing exhibitions. Marginal seats coincide with extreme iso-visual line, thereby assuring good view on iso-visual basis. The centers of action for baseball, football and boxing are at the center of the circle. Removable bleachers are an important feature of this design, prepared by Myron W. Serby, stadium consultant, for the Veterans Memorial Stadium at Jersey City.



Marginal seats should coincide with iso-visual lines. Sketch illustrates proper method of locating portable bleachers for football over running track.





Rectangular play area designed for baseball, track athletics and football. Removable bleachers definitely incorporated in the design. End zone football seats are inferior to sideline seats on iso-visual basis. This layout is not suitable for good view at boxing exhibitions.

Acme—P. & A.

The parking problem is serious, as illustrated in this air picture of the stadium during a football game. A thousand or more cars could be accommodated by parking decks within the stadium.

THE YANKEE STADIUM
NEW YORK CITY
OSBORNE ENGINEERING COMPANY

Facade. The cost of a masonry facade with its huge arches and pylons is rarely justified if funds are limited. The money might well be spent for better or more seating, inside parking, floodlights, etc. A clean structural design of the facade will serve its major purpose in supporting and bracing the outer perimeter of the seating deck.

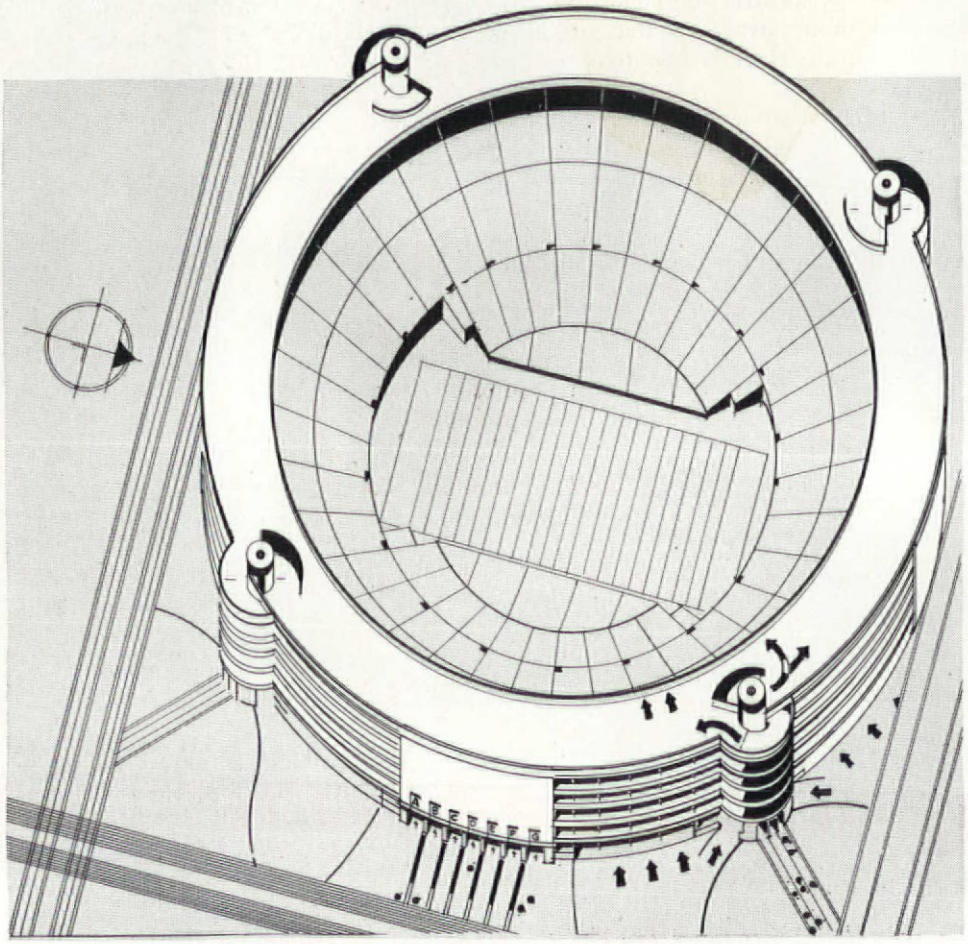
Decking. Treads and risers compose the decking. Many decks consist of monolithic reinforced concrete treads and risers. Treads may be of poured or precast concrete slabs on structural steel risers. A recent development is a monolithic construction in which both treads and risers are of structural steel. This battledeck construction consists of risers of built-up welded Z members supporting ¼″ steel tread plates at top and bottom flanges. The riser joists are delivered to the job with seat brackets attached. The plates are painted or surfaced with a finish of asphalt.

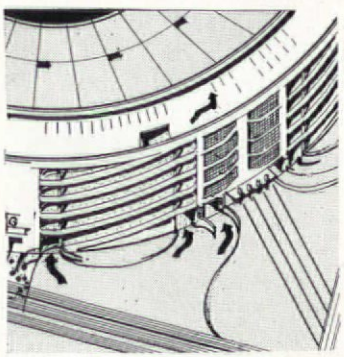
Support Framework. Unless site conditions favor cut-and-fill earth construction it is necessary to support the decking by means of structural framework, which may be of reinforced concrete or structural steel. In many stadiums the first eight or ten rows of decking are supported on earth fill. The structural design must consider all live and dead loads and must also provide against the lateral stresses due to crowd action.

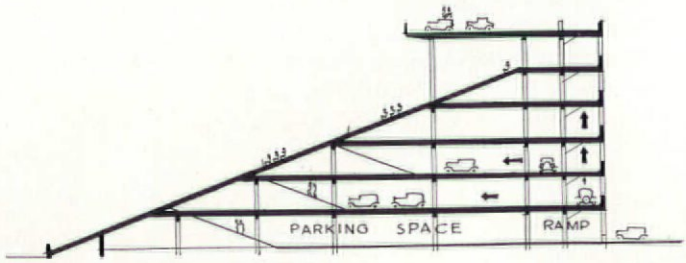
Fire Resistance. This depends upon the percentage of wood used in the stands. Hence modern stadiums avoid wood for decking or support framework. Wood is used for seat slats and backs and for grandstand roofs.

Stability. This factor involves structural design. The decking should be designed to withstand, without sway or excessive vibration, a live load of 100 pounds per square foot vertically applied and a horizontal load of 8 pounds per square foot. All members of the support framework must be solid enough to carry maximum loads without sway or excessive vibration. Bracing and fastenings should be adequate. Where low bearing soil values obtain, requiring large spread footings or piles, light weight structural materials are economical and their use will avoid misgivings due to excessive settlement.

Weather Resistance. This involves cost of upkeep. Concrete deteriorates quickly if the utmost vigilance during construction has not been maintained. From season to season alternate contraction and expansion occurs from freezing and thawing. Precast concrete







STADIUM DESIGN WITH PROVISION FOR PARKED SPECTATORS
This scheme, developed by K. Lönberg-Holm and S. Washizuka, permits use of upper roof deck as space for parked spectators. Lower levels could be used similarly.
Upper drawing shows circular ramp arrangement utilizing the four corners of a square lot for automobile entrances. Lower drawing is an alternate arrangement incorporating straight-run ramps into the permanent stand construction.

slabs provide a multiplicity of expansion joints which eliminate cracking. They were first used on the Harvard stadium. Battledeck construction yields to foundation settlement without structural fracture and will take up temperature changes due to its inherent elasticity.

Erection. As with all modern structures, there is a growing tendency to design stands with a maximum of shopwork where manufacturing organization and equipment obtains. Under these conditions inspection is easily made, and field work greatly simplified and speeded up. This trend has entered the stadium field, leading to the use of fabricated structural steel for decking and support framework.

True Cost. This is the first cost plus the later charges for upkeep, i.e., maintenance and depreciation. The upkeep factor is of primary importance in stadium stand construction because the functional elements—the treads and risers—are exposed to weather the year round in contrast with floors of buildings which are enclosed.

Roofs

The use of roofs in connection with outdoor exhibition structures for the purpose of shading spectators from the sun dates back to Roman times. Great awnings were used to shade the stands of the Coliseum. They were adjusted by means of ropes fastened to the parapet.

Roofs are a necessity during the baseball season, and are also required for press and broadcasting accommodations during the football season. Roof location and width must be designed to provide shade for the entire section of grandstands. (See *Orientation.*)

Multiple Decks

Multiple decks are usually built in connection with stadiums on expensive land. While they bring the spectators nearer to the play, they are usually deficient as to good view clearance. Most rear seats under the decks do not afford a good view of high flies in baseball. A further difficulty arises from the need for ramping crowds to the upper decks, involving increased construction costs. In most cases single decks are more economical and efficient. Before a decision is made as to single or multiple decks, alternate designs and estimates should be prepared and considered in connection with good view, land costs, and relative total costs.

Parking Decks

The automobile parking problem promises to increase in seriousness. Those who have driven to large games will remember keenly the inconvenience and discomfort involved. If half the patrons come in cars, one acre of parking space is needed for each three thousand stand capacity. The large stadium requires ten acres or more of parking space.

A portion of this required space may be supplied by parking decks below the seating deck where there is a vast volume of waste space which can be utilized profitably in this manner. Ramping arrangements are easily provided, the net result being a further addition to public comfort and convenience.

Parked Spectators

A further concession to public convenience provides for parking aisles on the stadium decks. Seated in their cars with a good view of the playing field, these spectators would be located behind the seated patrons or on the roof. It is necessary to have a wide aisle around the perimeter and the necessary ramps from parking decks below.

Good View

The successful stadium is designed to serve the public. Of all the factors that contribute towards this end, that of providing for spectators a good view of all points of interest on the play area is most important. Good view requires that spectators enjoy nearness to the attraction and clearance or freedom from obstructions. The plan of the seating area determines nearness; the slope of the seating deck determines clearance.

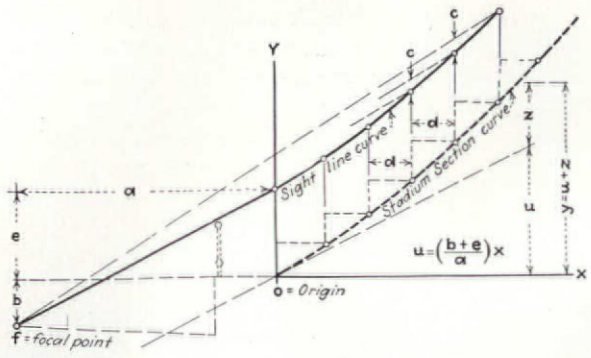
The Nearness Factor of Good View. The inner perimeter of the seating area is the outer perimeter of the play area. Obviously, seating on this perimeter is most desirable from the point of view of the spectator who wishes to see the attraction as near as possible to the field of action.

The center of action in the football play area is in the exact center of the 50-yard line. In the baseball play area, this center is the center of the diamond.

From these considerations it is evident that spectators, seated along the arc of a circle with center at the center of action, will derive nearly equal satisfaction in witnessing these games, other things being equal. This arc is usually referred to as the iso-visual line. These iso-visual lines are concentric and may not coincide with the layout of the rows of seats.

The marginal seats are those along the outer perimeter of the seating area. They are the least desirable when judged from the factor of nearness. Most football stadiums are provided with marginal seating of widely varying degrees of spectator satisfaction. Seats behind the end zones are much less desirable than marginal seats opposite the 50-yard line at the center of attraction.

In a well-proportioned seating plan, the marginal seats should coincide with the iso-visual line. This means that the marginal spectators will be nearly equidistant from the center of attraction and will derive approximately equal satisfaction on the basis of nearness.



DESIGN DATA FOR DETERMINING STADIUM SECTION CURVES:

Values of z in feet from Formula:

$$z = (0.46)\ (a+x)\ \log_{10}\left(\frac{x}{a-1.25}+1\right)$$

See diagram on opposite page. For other values of a and d, apply coefficients from table opposite. Values of z in feet for different values of a and x when c = 0.50 feet and d = 2.50 ft.

TABLE 1

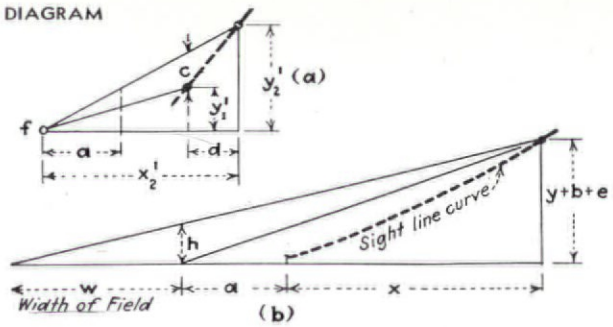
x Ft.	Values of a in Feet																x Ft.
	20		40		60		80		100		200		300		400		
		diff.		diff.		diff.		diff.		diff.		diff.		diff.		diff.	
0	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0
		2.56		2.30		2.20		2.15		2.12		2.06		2.04		2.03	
10	2.56		2.30		2.20		2.15		2.12		2.06		2.04		2.03		10
		3.24		2.69		2.49		2.38		2.31		2.16		2.11		2.08	
20	5.80		4.99		4.69		4.53		4.43		4.22		4.15		4.11		20
		3.75		3.04		2.74		2.57		2.47		2.25		2.17		2.13	
30	9.55		8.03		7.43		7.10		6.90		6.47		6.32		6.24		30
		4.15		3.31		2.96		2.76		2.62		2.33		2.22		2.17	
40	13.70		11.34		10.39		9.86		9.52		8.80		8.54		8.41		40
		4.48		3.57		3.16		2.92		2.77		2.42		2.29		2.22	
50	18.18		14.91		13.55		12.78		12.29		11.22		10.83		10.63		50
		4.77		3.79		3.33		3.08		2.90		2.50		2.35		2.27	
60	22.95		18.70		16.88		15.86		15.19		13.72		13.18		12.90		60
		5.02		3.99		3.51		3.22		3.03		2.57		2.40		2.30	
70	27.97		22.69		20.39		19.08		18.22		16.29		15.58		15.20		70
		5.24		4.18		3.66		3.35		3.14		2.65		2.45		2.35	
80	33.21		26.87		24.05		22.43		21.36		18.94		18.03		17.55		80
		5.45		4.34		3.81		3.48		3.26		2.73		2.51		2.40	
90	38.66		31.21		27.86		25.91		24.62		21.67		20.54		19.95		90
		5.62		4.50		3.94		3.60		3.36		2.78		2.56		2.43	
100	44.28		35.71		31.80		29.51		27.98		24.45		23.10		22.38		100
		5.79		4.62		4.06		3.70		3.46		2.86		2.61		2.47	
110	50.07		40.33		35.86		33.21		31.44		27.31		25.71		24.85		110
		5.95		4.78		4.18		3.81		3.55		2.92		2.65		2.51	
120	56.02		45.11		40.04		37.02		34.99		30.23		28.36		27.36		120
		6.09		4.89		4.29		3.91		3.65		2.99		2.71		2.55	
130	62.11		50.00		44.33		40.93		38.64		33.22		31.07		29.91		130
		6.22		5.02		4.40		4.01		3.73		3.04		2.75		2.59	
140	68.33		55.02		48.73		44.94		42.37		36.26		33.82		32.50		140
		6.35		5.13		4.50		4.10		3.82		3.10		2.80		2.63	
150	74.68		60.15		53.23		49.04		46.19		39.36		36.62		35.13		150
		6.46		5.22		4.59		4.17		3.90		3.16		2.84		2.66	
160	81.14		65.37		57.82		53.21		50.09		42.52		39.46		37.79		160
		6.58		5.33		4.68		4.28		3.97		3.22		2.88		2.69	
170	87.72		70.70		62.50		57.49		54.06		45.74		42.34		40.48		170
		6.68		5.42		4.77		4.35		4.05		3.27		2.93		2.73	
180	94.40		76.12		67.27		61.84		58.11		49.01		45.27		43.21		180
		6.78		5.52		4.86		4.42		4.12		3.32		2.97		2.77	
190	101.18		81.64		72.13		66.26		62.23		52.33		48.24		45.98		190
		6.87		5.61		4.94		4.51		4.19		3.37		3.01		2.80	
200	108.05		87.25		77.07		70.77		66.42		55.70		51.25		48.78		200
		6.97		5.68		5.01		4.57		4.25		3.43		3.05		2.84	
210	115.02		92.93		82.08		75.34		70.67		59.13		54.30		51.62		210
		7.06		5.76		5.09		4.64		4.32		3.47		3.09		2.86	
220	122.08		98.69		87.17		79.98		74.99		62.60		57.39		54.48		220
		7.14		5.85		5.15		4.71		4.39		3.52		3.13		2.90	
230	129.22		104.54		92.32		84.69		79.38		66.12		60.52		57.38		230
		7.21		5.92		5.23		4.77		4.44		3.57		3.16		2.93	
240	136.43		110.46		97.55		89.46		83.82		69.69		63.68		60.31		240
		7.30		5.99		5.29		4.83		4.50		3.61		3.21		2.96	
250	143.73		116.45		102.84		94.29		88.32		73.30		66.89		63.27		250

COEFFICIENTS FOR OTHER VALUES OF c AND d

TABLE 2

d Ft.	Values of *c* in Feet							
	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65
2.00	0.748	0.873	0.997	1.122	1.246	1.371	1.495	1.620
2.08	0.718	0.838	0.957	1.077	1.196	1.316	1.435	1.555
2.17	0.690	0.805	0.920	1.035	1.150	1.265	1.380	1.495
2.25	0.665	0.776	0.886	0.997	1.108	1.219	1.329	1.440
2.33	0.642	0.749	0.856	0.962	1.069	1.176	1.283	1.390
2.42	0.619	0.723	0.826	0.929	1.032	1.136	1.239	1.342
2.50	0.600	0.700	0.800	0.900	1.000	1.100	1.200	1.300
2.58	0.581	0.678	0.775	0.872	0.969	1.066	1.162	1.259
2.67	0.564	0.658	0.752	0.846	0.940	1.033	1.127	1.221

DIAGRAM



This principle indicates that the ideal outer perimeter of the seat area is a circular arc. The Greeks employed this in their theatres and our modern theatre design is based on precisely the same reasoning. But recent stadium designers seem to have overlooked this factor, following the lead of the Greek stadium designers who likewise provided parallel inner and outer seating area perimeters, probably for the reason that large capacities were not required.

Large stadiums having capacities up to 125,000 or 150,000 should be carefully planned to insure a maximum number of good view seats on a nearness basis.

Visual Clearance Factor of Good View. For any stadium section, the position of a spectator seated in the first row largely determines the design. The sight line curve, an assumed smooth curve passing through the eyes of spectators up the section, is fixed as to locus by the elevation of the eyes of the first spectator with relation to a definite focal point on the field taken as the origin. The focal ray of each spectator clears the eyes of each spectator immediately below by a vertical distance "c". Although oblique sections are often investigated in stadiums, the section design is based on a section taken normal to the inner perimeter of the seating area.

Taking "e" as the vertical measurement from floor to eyes of the average seated spectator, and changing the origin of the curve from the field focal point to a new origin at the base of the first riser, we obtain by transformation the corresponding stadium section curve, which can be used directly to lay out the treads and risers. Table 1 gives data for plotting the section with given values of "a" and "x". In this table the tread width is taken as 30 inches and the "c" value as 6 inches. For other values of tread width and clearance, Table 2 gives multipliers.

Discussion of the *Clearance Formula Constants* is given herewith:

"a"

The "a" or sight distance is taken as the distance from first row to the nearest point of play interest. In football this is the distance from first row to sidelines. In baseball it is the distance from first row to catcher or to foul lines, whichever is nearer. In track it is the distance from first row to center of track, the focal point being taken at the runner's waist height or 3 feet above grade. This involves consideration of the "b" factor.

"b"

This constant represents the vertical distance from focal point to first tread of the seating deck. It may be a negative quantity when the focal point is above the first tread. This condition occurs when the focal point is the boxing ring elevated above grade. In multi-deck stadiums, the "b" constant is of major importance. In football stadiums this distance is 2 to 3 feet. This rise above grade provides for the installation of removable bleachers in front of the permanent stands and over the running track.

"c"

The "c" or clearance constant is the measure of visual clearance, defined as the distance vertically

C. Moulin from Galloway

MEMORIAL STADIUM, UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA
JOHN GALEN HOWARD, ARCHITECT
E. E. CARPENTER, CONSULTING ENGINEER

from a spectator's focal ray to the eyes of his preceding neighbor. For ideal clearance, this value is 6 inches when heads are covered and 4 inches for uncovered heads as in theatres. When these "c" values obtain, there is absolute clearance from row to row. Absolute clearance is easily provided in stadiums of small capacities. In large stadiums having fifty to a hundred rows of seats the calculated heights of the structures exceed reasonable limits. Under these conditions clearance is limited and requires spectators to look between the heads and over the shoulders of preceding neighbors.

In most large stadium designs it is necessary to adopt limited clearance values, which should be fairly uniform for all seats. Spectators will then have a good view of the attraction, except when the action is near the seating area inner perimeter.

The investigation of the value of "c" is of the utmost importance when a stadium design requires seating accommodations for baseball, football, and boxing. Especial attention should be paid to the clearance of seating between ringside and stands.

"d"

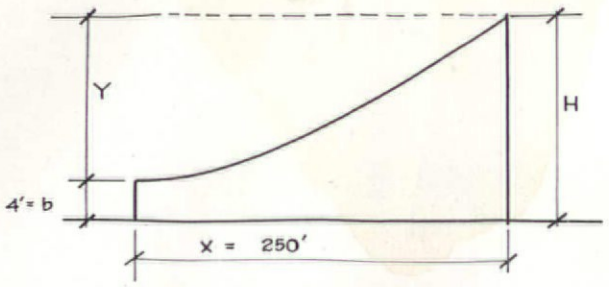
This is the width of treads or back to back distance between seats. Seats with backs should be on 30-inch rows, without backs on 28-inch rows.

"e"

This constant is the height of a spectator's eyes above the tread. As most stadiums are designed for seated spectators, this value is taken as 4 feet. It is interesting to note that many European stadiums, notably that at Wembley Park in London, provide for standing spectators. At Wembley Park over 90,000 standees lean against pipe railings provided for the purpose. In this case the proper "e" value is the standing height from tread to eyes, an increase which requires increased slope of the seating deck.

Example: to determine the maximum height of a section consisting of 100 rows at 30 inches, first tread being 4 feet above field grade. We have the following constants:

a.	100 feet	(assumed)
b.	4 feet	(given)
c.	6 inches	(assumed)
d.	30 inches	(given)
e.	4 feet.	(assumed)



H (total height) equals y plus 4 feet (b)

$y = u + z$

$u = \left(\frac{b+e}{a}\right) x = \left(\frac{4+4}{100}\right) 250$

$= 20$ feet

$z = 88.32$ feet

$y = 108.32$ feet

$H = 102.32$ feet

The designer may desire to reduce this total height to 90 feet, or a cut of practically 22 feet. This is 25% of the z value derived above. The section is therefore computed on a basis of 75% of the values given in the table for a = 100 feet and d = 30 inches. On this basis the calculated "c" value for the above value of "a" and "d" is 75% of 6 inches or 4½ inches, which is limited clearance. It may be seen from the table that for absolute clearance of 6 inches the final design indicates an "a" value of about 200 feet.

ACCESS AND EGRESS

Site

Selection of the proper site involves consideration of accessibility, ample area, neighborhood, grading and foundation conditions. Accessibility requires that there exist present or potential transit facilities and ample paved thoroughfares for motor traffic without bottlenecks. If the site is quickly and easily reached, it may be located beyond the outskirts of the city. Here land costs are usually low and may be sold at a profit when the site greatly increases in value in the future.

The modern stadium requires area for the stadium proper as well as parking space for the public. Allowing one acre of parking for each five thousand capacity, the fifty thousand capacity stadium will require ten acres. Parking decks in the stadium will relieve a portion of this requirement, but the larger part of the large stadium parking will necessarily require outside space. If public convenience is considered, the practice of compelling motorist patrons to park dozens of blocks away from the stadium and in miscellaneous side yards is greatly to be deplored.

The stadium proper will require from 5 to 15 acres and upwards depending on capacity. To provide a certain degree of landscaping, there should be some area outside the enclosure to dignify the structure.

The selection of neighborhood creates a problem that has prevented the realization of many stadium projects. This matter of realty technique should be left to experts who fully appreciate the effect of a stadium on its environment. The problem is no more difficult than that of choosing sites for schools or playgrounds.

Preliminary test holes or core borings should furnish foundation information. A topographical survey should be made in this connection and all this information used in the preparation of the estimate. Many preliminary stadium estimates have gone wrong due to lack of knowledge of grading and foundation conditions, including drainage problems. If the site is favorable for a cut-and-fill stadium, alternate estimates may be made against the structurally supported type. In investigating the cut-and-fill design, due consideration should be given to drainage cost, pumping, etc., and the need for sheltering crowds in case of rain.

Entrances and Ticket Booths

The stadium crowd enters during a relatively long period, i.e., one-half hour to an hour. The rate gradually increases toward the start of game. A good ticket seller can handle from 1,500 to 2,000 sales per hour. Each booth shelters two sellers and will require two aisles. The booth requirements will therefore determine the width of the entrances. For the peak crowd games temporary booths may be located at some of the exits. Usually separate entrances are provided for bleacher crowds. If the stand crowds are divided into box section, reserved and unreserved, suitable guarded railings inside the entrances will shunt them into their respective primary channels of distribution under the stands.

Ramps, Portals and Exit Gates

The primary channels of distribution consist of the aisles at grade under the decks, together with the ramps leading to their respective portals or vomitories. These channels should not include steps which are dangerous under stadium conditions.

Ramps should be non-skid surfaced and sloped one to four-and-a-half or five, with landings at 15- to 20-foot levels. The width of ramps, portals and exit gates should be interrelated. This width depends on the exit requirements. It is advisable to base these requirements on a 5-minute exit of the entire crowd. On this basis a 10,000 crowd will require 80 lineal feet of ramp, portal or exit gate width. This is on an assumption of 3 feet square walking space for each person, traveling at 3 miles per hour, with a factor of safety of two. Using these figures, a 10-feet wide vomitory will take care of 1,250 people. If the vomitory allowance is smaller than

Kurt Grimm

STADIUM AT NUREMBURG
OTTO SCHWEIZER, ARCHITECT

that for ramps and exits, the crowd will bottleneck at the vomitory during egress.

Careful study should be given to the location and design of these three elements. At many stadiums the crowd is permitted to exit across the playing field. This greatly decreases any hazards arising from panics and mad rushes which often occur in the excitement of athletic competition.

Longitudinal and Transverse Aisles

These are the secondary channels of distribution, leading the crowds from the vomitories to their seat rows. Longitudinal aisles are provided from vomitory to vomitory and should be at least 5 feet in width. There should be at least two: one between the box section (or front section of 8 or 10 rows) and the reserved seating, and one at the rear of the seating. Some designs indicate longitudinal aisles in front of the seating at grade and also an additional intermediate longitudinal aisle between the lower aisle and the outer perimeter.

In this connection it should be understood that aisles obstruct view when late comers are moving to their places, and there should therefore be as few aisles as possible. For this reason the marginal rear aisle is desirable and it may also be used for standing room at peak games.

Transverse aisles extending up the deck are usually spaced 30 to 50 feet apart. When riser heights exceed 9 inches intermediate steps are required. It is desirable for safety that all runs be uniform. Therefore intermediate treads and risers should be half the dimensions of main treads and risers, i.e., when main treads and risers are 10 inches and 30 inches, the step blocks should be 5 inches by 15 inches. The usual width of transverse aisles is 3 feet.

STADIUM EQUIPMENT AND CONVENIENCES

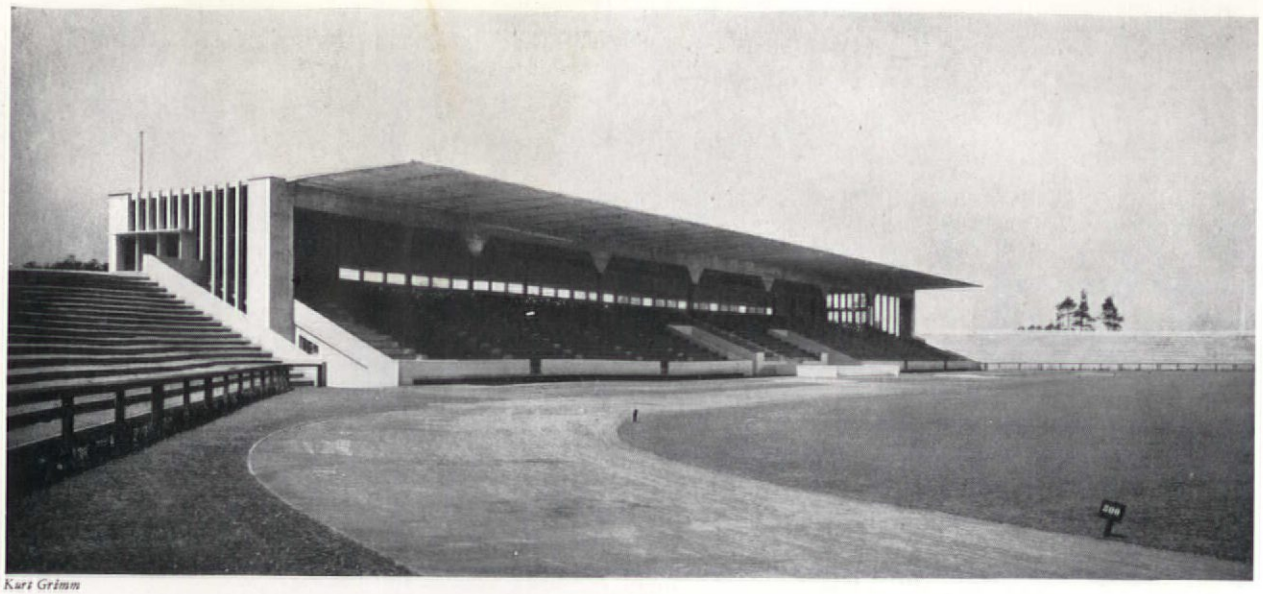
The total cost of the stadium includes the cost of the land required for the stadium proper and outdoor parking space plus expenditures for preparing surfaces for use, the cost of the permanent and removable seating, and the cost of the remainder of the items necessary to complete the project. This remainder is termed stadium equipment and conveniences. The following discussion covers the major items involved in this classification:

Public Toilets

Modern toilet facilities include as additions to the plumbing fixtures such accommodations as smoking and lounge rooms, public telephones, and the like. One authority estimates the following fixtures are required: for each one thousand men 1 toilet and 6 urinals, for each one thousand women 7 toilets. The buildings should be easily accessible to the seating decks and designed for light, ventilation and frequent cleaning.

Team Quarters

Team quarters are often referred to as field houses and are provided for home and visiting teams, preferably in different buildings. There should also be accommodations for field officials. Team rooms are furnished with 6 to 8 showers, 2 toilets and 4 urinals,



Kurt Grimm

STADIUM AT NUREMBURG
OTTO SCHWEIZER, ARCHITECT

together with rubbing tables, lockers, clothes-drying equipment, fans, etc. Most team quarters should be heated.

General Offices

General offices are provided when the operating management is housed at the stadium. It is desirable to locate these offices above or near the main entrance so that money from ticket sales can be safely taken to the cashiers through openings in the office floor or by means of pneumatic tubes.

Concession Accommodations

Catering to stadium crowds who consume enormous quantities of food and drink is very profitable. Concessionaires pay from 5 to 10 cents per admission for the privilege of exclusive handling of concessions. Thus a stadium handling an annual capacity of one million will receive from $50,000 to $100,000 in concession income. This amount often pays the annual interest charge on the entire stadium investment, and therefore justifies the expenditure of amounts required for cushion and refreshment booths and commissary quarters. It is desirable that all buildings and major equipment required for concessions be built and owned by the stadium authorities or owners. Thus the location and design of the booths and the commissary will fit in with the general design of the stands. It is advisable to consult concessionaires in this matter before proceeding with preparation of final plans. The commissary quarters are used for storage of goods, their preparation and distribution to salesmen, and include equipment for bottled wares, peanut cabinets, tobacco humidor cabinets, refrigeration and toilets.

Miscellaneous Quarters

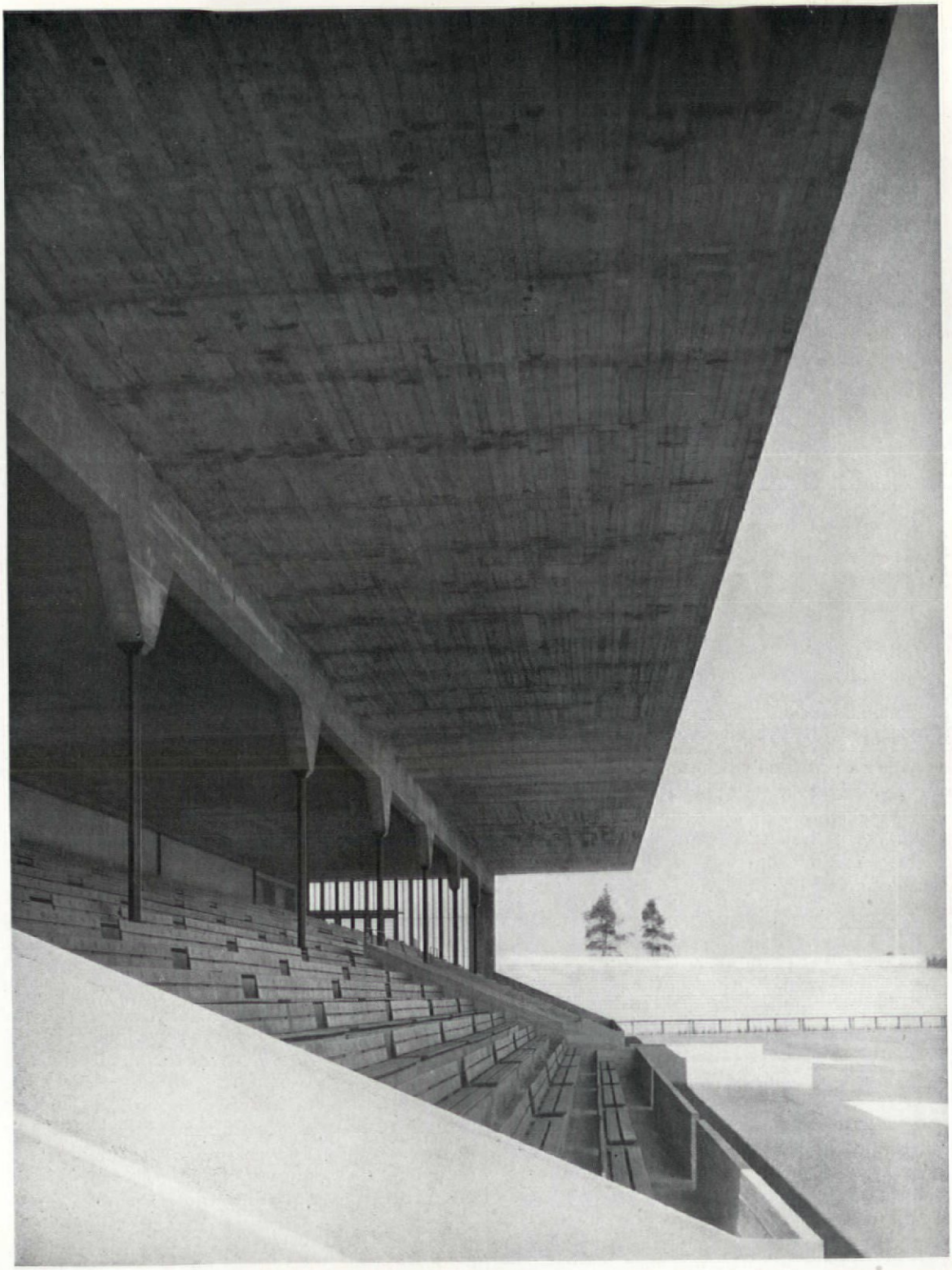
Quarters should be provided for the storage of athletic paraphernalia, paints, lime, cleaning equipment, etc. Space is also required for the grounds superintendent's office.

Press and Broadcasting Accommodations

Adequate press and broadcasting accommodations are equally as important as those for concessions. The modern stadium is a big amusement business which has been made possible by the intense public interest created and maintained by newspapers and radio broadcasting organizations.

At important games as many as five hundred writers and reporters from all parts of the country must be accommodated. A dozen or more represent news services and send their copy directly to their offices by means of telegraph instruments at their desks in the stadium press stands. A greater number use telephones which are furnished for their use in transmitting the progress of the game. The telegraph and telephone men should be allotted preferred space in the press stands. In addition to these two classes of press-stand occupants is a third class of individual writers who represent large newspapers. These take notes during the game or typewrite their matter as the play progresses.

Facilities should be provided for the still photographers who represent the picture news services. There are also a number of crews of motion picture



Kurt Gramm

STADIUM AT NUREMBURG
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photographers, together with the sound crews. Finally space, preferably glass enclosed, should be allotted for broadcasters.

These quarters should be well isolated from the crowds but should afford a good view of all parts of the field. Where there is a grandstand roof, the press and broadcast facilities may be located at the inner perimeter as near as possible to the baseball 50-yard line or the home base in baseball games.

In designing these accommodations, it is advisable to consult with officials of sports writing associations, telegraph companies, telephone offices and broadcasting organization. Sound equipment is heavy and requires study as to the loads involved. The publicity men should be furnished with well heated and ventilated quarters, with toilets and drinking water.

Scoreboards

Scoreboards should be designed so that game information is visible from all parts of the seating area. Large electrically operated scoreboards may be leased or purchased from firms which specialized in this equipment. For small projects hand-operated boards are satisfactory. Game information is given on metal plates, suspended from hooks or revolved by hand pulleys.

Signs and Lettering

Easily read signs should indicate direction to portals, toilets, etc. While unnumbered seats, if continuous, will hold a greater number by packing, it is advisable from the standpoint of public comfort to number each seat. Numbers may be stenciled or burned into back rests, or stenciled on the risers if there are no backs. Metal numbers on back rests are uncomfortable.

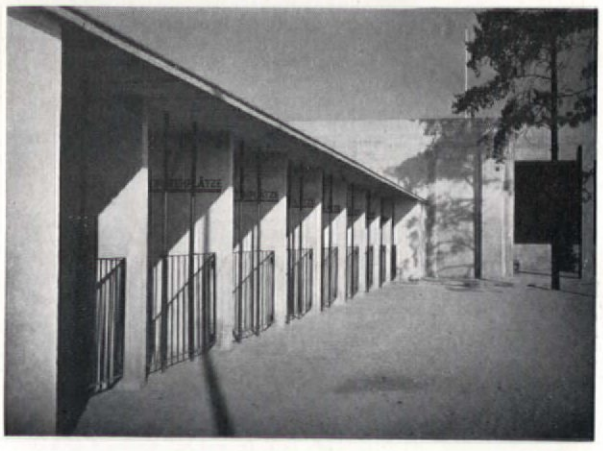
Floodlighting

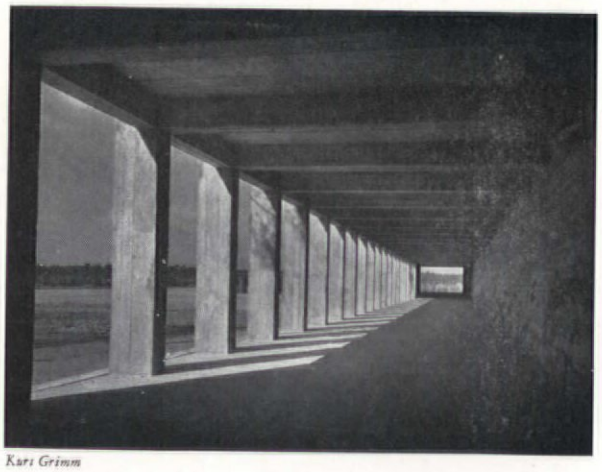
The usefulness and income of a stadium may be greatly increased by efficient floodlighting equipment. The lights should be designed and located for maximum light with minimum glare. The year 1930 was the first in which this feature of stadium operation was tried out on a large scale. Many stadiums have been equipped and the results are very promising.

A large stadium will rquire from 150 to 200 kilowatts to illuminate the field. Allowing 4 hours of night operation at 5 cents per k.w.h., this cost varies from $30 to $40 an evening. With illumination of stands and wear of lamps the total cost will probably range from $50 to $100 an evening.

FENCES, GATES AND OTHER ELEMENTS

Since a charge is universally made for admission to stadiums, a high fence is a necessity where no enclosing walls exist. These fences may be of woven wire with barbed wire or cut wire tops if the stands cut off the view of the field from the outside. Otherwise solid fencing must be used. Most baseball clubs augment their income by selling advertising





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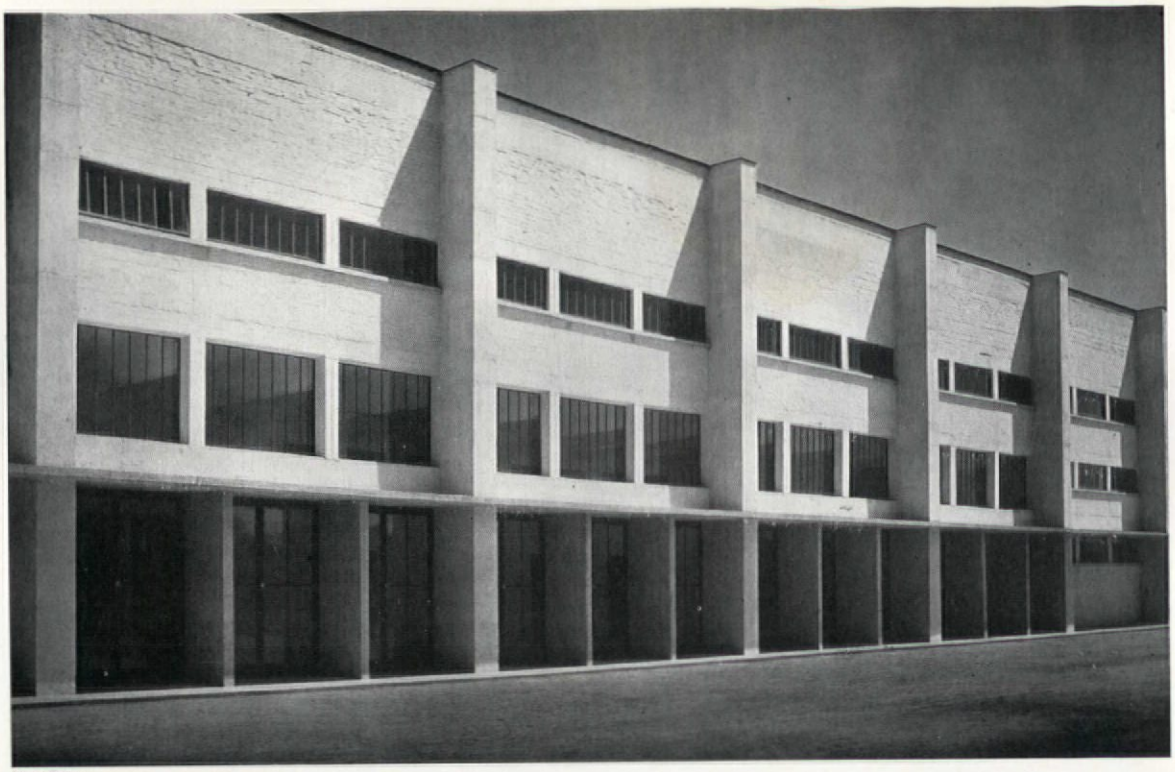

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space on the inside surface of 9- or 10-foot high fences which are lined inside with metal walls or plates. Masonry fences are expensive and funds ordinarily appropriated for this purpose might be better employed to provide more comfortable seating or greater capacity. Fences are also required for the separation of the various crowd classifications along the primary channels of distribution.

Although sliding gates or rolling shutters are commonly used, swinging gates are more economical and just as efficient.

Flagpoles. Flagpoles are used around the upper perimeter of the facade, at about 100-foot centers. They are often clustered at entrances. They are one form of expression of the gala atmosphere of outdoor attractions. In addition to these small poles of 10- to 20-foot heights the baseball club will require a large flagpole in center field 85 to 100 feet in height. This pole flies the pennant flag if and when it has been won by the home team.

Protection Nets for Baseball. To protect spectators from foul balls, netting of wire or well-tarred cotton thread is necessary. These nets shield the spectators in the vicinity of home base and extend from the inner perimeter of the seating area to the upper deck or roof above. The stands beyond the diamond may be protected by 8-feet high netting.

Turnstiles. Most concessionaires pay privilege fees based on the turnstile records of attendance. This count is greater than seat sales because of the free pass holders, press representatives and others. Non-recording or recording types, preferably the latter, are used.

Emergency Quarters. For handling accident cases among spectators there should be a private room well isolated from the primary channels of distribution under the stands and preferably in the general office building. It should be equipped with couches, stretchers, medical kits and other necessary items.

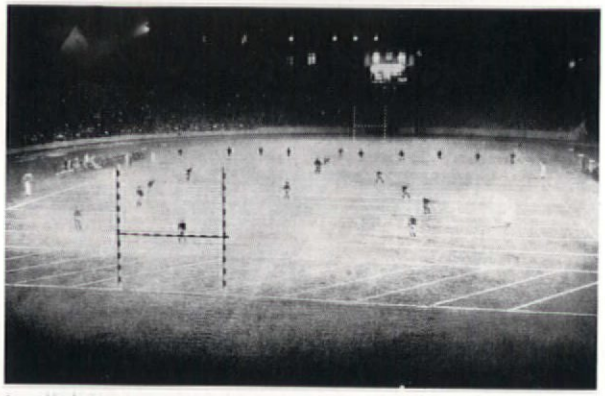
Taxi and Telephone. A place for the taxi starters should be provided at points which will not interfere with outgoing pedestrian traffic. Public telephones should be available in all parts of the stands and in public toilets.

Mechanical Trades. Hose connections are necessary for fighting fire and watering the playing field. Heat and hot water are required for the players' quarters and other rooms. As in all building work the mechanical design and specifications should be prepared by a competent mechanical engineer. The mechanical installation includes plumbing, heating, ventilating, electrical work, refrigeration, concession equipment, etc.

Playing Equipment. The furnishing of the various accessories required for football, baseball, track and other events is not included in the stadium building work. Such items are back stops, base bags and other portable items which are furnished by the stadium users or the operating management.

G. E. Illuminating Engineering Lab

WASHINGTON BASEBALL PARK
INDIANAPOLIS



Crouse-Hinds Co.

FLOODLIGHTING A FOOTBALL FIELD
SYRACUSE, NEW YORK

Galloway

PRESS STAND AT YALE BOWL
NEW HAVEN, CONNECTICUT

CHECKING LIST OF STADIUM REQUIREMENTS

A. PRELIMINARY

1. *Surveys:* Aerial photos and topographical survey with complete data on water mains, sewers, gas lines, electric current, fire department requirements, streets, etc.
2. *Test borings and water table.*

B. PREPARING SITE

1. *Rough grading:* Balance cuts and fills. Locate top soil supply.
2. *Drainage:* Use 6" to 12" porous drain tile for playing field. Tee inlets with rubber caps around running field. Connect to 12" vitrified tile to catch basins. Pumps in catch basin. Connect catch basin to main street sewers. Grade play area to tee inlets and blind ditches.
3. *Fine grading:* Under grandstand, stands and enclosure structure use 6" layer of cinders. Cinder approaches and paths around perimeter of stadium. Seeded and sodded areas on playing field. Skinned surfaces at baseball diamond. Special cinders for running track. Pavement brick at main entrance approach of herring bone pattern.

C. GRANDSTAND, STANDS, ENCLOSURE STRUCTURES

1. *Piles:* Combination precast concrete and wood. Wood cutoff at 2 feet below minimum water line. Test to 20 tons safe.
2. *Pile caps:* Reinforced concrete; see local code. Use spread footings to maximum 36 square feet at 1,500 pound soil pressure.
3. *Structural steel:* Grandstand, stands, enclosure structure, roof, all lintels throughout, roofs of team and toilet buildings, ramp framing, floodlight towers, complete framing for administration building, and press and broadcast quarters on roof, framing for water tanks, etc. Live load throughout 100 pounds. Crowd sway 8½ pounds per square foot of seating area for lateral bracing. Battledeck construction for main seating, treads protected with 1¼" thick asphalt concrete finish. Design and detail all exposed steel as trusses, columns, struts, etc., for neat architectural appearance.
4. *Miscellaneous concrete:* Concrete box section and front aisle. Concrete ramp slabs. Expansion joints on minimum 6-foot centers.
5. *Step locks:* Asphalt concrete fill in steel containers. Note steel containers in structural steelwork.
6. *Asphalt mastic:* ½-inch finish on approach to press and broadcast quarters on roof. Use over cinder concrete at all uncovered surfaces.
7. *Roof carpentry:* 4" x 6" rafters on steel purlins. Roofers 2" x 10" D. & M. S.L.Y.P. No. 1 grade.
8. *Roofing:* Five ply built-up asphalt except where asphalt mastic finish.
9. *Sheet metal:* 16 oz. copper for mansards and 20 oz. for skylights. Gutters, leader heads and leaders 16 oz. Eave strips and facia at inside perimeter 16 oz.
10. *Painting:* Shop coat specification red lead. First field coat on exposed steelwork above deck including roof trusses to be selected unfading green shade approved lead and oil paint. Second coat field paint same except shorter in oil. Exposed structural steel at underside of deck construction and below to grade to be painted two field coats specification aluminum paint, except paint lower 6 feet of columns selected shades lead and oil paint two coats.
11. Note that accommodation requirements (G) intended to cover specifications on above, where affected.

D. SEATING FOR PERMANENT STANDS

1. *Box chairs:* Flat folding type steel frame and back, wood slats, order 1,500 per approved sample. These to be used for box section of main stands.
2. *Reserve seats:* Built-up steel brackets riveted to risers included in structural steelwork. Ironwork for backs in ornamental ironwork. Seat slats continuous 2' 2" x 6" and backs also wood as per detail. Flat iron armrests for individual seating. Capacity 10,542 at 19" seat allowance. Include wood finish and painting in general painting contract.
3. *Unreserved seats:* Same as reserved except arm rests about 6-foot centers. Capacity 14,164 at 19" seat allowance.

E. REMOVABLE SEATING

1. *Main bleachers:* Portable structural steel framing, stringers maximum 5-foot centers, seat boards 2" x 10" D4S, tread boards solid fill 2" x 10" D4S, No. 1 spruce painted to approved weatherproof specification. Tread width 25½" and riser heights from 7½" to 11". Capacity for football layout 32,450 and for boxing 35,910 at 18" seat allowance. Store under enclosure structure when not in use.
2. *Ramp bleachers:* Same as main bleachers except risers vary from 1½" to 3½". All treads 30" width. Seating built-up per details. Capacity for football layout 5,986 and for boxing 18,480 at 18" seat allowance. Store under enclosure structure when not in use.
3. *Ringside chairs:* Same as box chairs to rest on boards on ground. Capacity for boxing 2,180 to 19" seat allowance.

F. WALLS

1. *Exterior facade:* Exterior and interior faces of selected face brick. Thickness 1 ". Base of cut cast stone granite finish at entrances. Other base of concrete finish on poured concrete. Trim and band courses, coping, etc., of cut cast stone. Slate sills where shown. Statuary and ornamentation cut cast stone. Windows steel double-hung and casements as noted. Louvers as noted.

2. *Metal walls:* Interior facade of enclosure structure at perimeter of baseball outfield of 20-gauge copper bearing panels. Doors and gates 14-gauge ditto. Cut for baseball scoreboard as detailed.

G. ACCOMMODATIONS

1. *Team quarters:* One for visiting team under deck opposite third base; home team a similar building opposite first base. Each 24′ x 42′ x 10′ (ceiling height), brick walls, cinder concrete roof slab on structural steel framing. Each building subdivided for manager, umpire, trainer, and players. Manager, 10′ x 14′—1 shower, 1 lavatory, 1 watercloset, 2 lockers, 1 telephone. Umpire 9′ x 10′—1 shower, 1 lavatory, 1 watercloset, 2 lockers. Trainer 10′ x 18′—5-lavatory battery, 2 wash trays, 2 lockers, 1 rubbing table, medicine cabinet, etc. Note that players use lavatories in this room. Players 12′ x 40′ for 25 men—6 showers, 2 waterclosets, 1 urinal, 30 lockers, 2 benches. Further equipment for team quarters to include hot water from boiler room of administration building, steam heat, electric water coolers, (3) electric clothes dryers, electric lights and fans, and liquid soap dispensers and tank, toilet paper holders, mirrors, towel holders, towel baskets, etc. Mechanical ventilation for manager and umpire quarters.

2. *Dugouts:* One each for visiting and home teams. Size 5′ 6″ x 35′ for 22 players. Locate near team quarters under deck, no roof required. Equip with lights, fans, telephone, electric water cooler.

3. *Public toilets:* Four toilets at grade under deck, two for men and two for women. Men's toilets 20′ x 55′ x 10′ ceiling height divided longitudinally for unreserved and reserved spectators. Total fixtures for each of men's toilet buildings—42 urinals, 5 waterclosets, 6 lavatories, two slop sinks, mirrors and shelves, etc. Smoking rooms equipped with leather upholstered benches and public telephones in booths. Women's toilets 20′ x 55′ x 10′ ceiling heights divided longitudinally similar to men's. Total fixtures for each building—15 waterclosets, 8 lavatories, two slop sinks, mirrors and shelves, etc. Rest rooms equipped with leather upholstered benches, medicine cabinets, telephone booths, emergency closets. Also rugs on floor, curtains and drapes, side wall mirrors, etc.

Public toilets at promenade deck level (future). A pair of men's and women's respectively, at main entrance and three secondary entrances. Additional future grade public toilets at three secondary entrances in pairs.

3. *Administration quarters:* Located at main entrance above main entrance lobby; for office work, treasurer, and executives. First floor has telephone room, taxi office and toilet, emergency room and toilet, and gas meter room. Second floor: president's office, women's toilet, men's toilet, and three additional executive. Note that pneumatic despatch tube system connects treasurer's office to ticket booths at main entrance one way system booth's to treasurer. Complete interior finish and mechanical equipment per list for administration quarters.

4. *Ticket booths:* Ten required at main entrance for 18 ticket sellers. Size 5′ x 7′ x 8′ high open tops with wire mesh screens as shielded from weather. Connect these to treasurer's office with pneumatic despatch system, as above. Four required at each of three secondary entrances, for a total of 22 ticket booths and 36 ticket sellers at all four entrances. Provide 12 additional removable ticket booths for peak games.

5. *Press and broadcast quarters:* Locate on roof over cantilever behind catcher to pitcher line equal to football 50-yard line. Press quarters 20′ x 66′ x 16′ ceiling height. Four tiers with 3′ 3″ treads and 2′ 6″ risers. 230 lin. ft. continuous desk for 115 reporters. Additional reporters (100) to be seated at sidearm writing chairs for peak games. Provide 115 folding chairs same as box chairs (see "D1") and store under press seating deck.

Broadcast quarters one at each end of press quarters. Size 10′ 6″ x 9′ 6″ x 10′ 6″ ceiling height. All soundproof walls. News reel quarters one at each end of broadcast quarters 9′ x 21′ x 10′ 6″ ceiling height. All soundproof walls. Still photo quarters one at each end of news reel quarters 5′ x 42′ x 10′ 6″ ceiling height.

Note all above quarters to be glazed on field side with ¼″ plate glass. Lights, steam heat, toilets, fans, electric water coolers, telephones, telegraph outlets, smoking room, etc. Note elevator service for these quarters with shaft at main entrance and emergency stairs to main deck below. Note heavy news reel equipment for sound to be located at columns only.

6. *Concession commissary:* Locate under main deck at grade near main entrance 50′ x 100′ x 16′ ceiling height varying with deck above. Tanks for bottled drinks, humidors for tobacco, peanuts, etc. Cooking equipment for frankfurters, ice cream cabinets, etc. Lay out all equipment in co-operation with concessionaire.

7. *Concession booths:* Required for cushions and refreshments. Locations to be at grade and on promenade deck. Co-operate fully with concessionaire.

8. *Parking decks:* Of battledeck construction with non-skid asphalt finish ½″ thick. Accommodations for 1,200 cars allowing 100 square feet per car.

Ramps as detailed to slope 1.5, cinder concrete slabs rough cement finish.

9. *Parked spectators:* Reserve 25′ width at promenade for cars in addition to 10′ width for seated spectators giving a total of 35′ of promenade width with separation curbing. Ramps to parking decks to be continued to promenade deck for these cars. Park all cars oblique at plainly marked space reservations.

10. *Storage space:* This space includes quarters for grounds superintendent and his force. Also for storage of turnstiles, paints, bleachers, protection nets, flags, backstops, goal posts, etc. Locate incinerator, paper bailers, refuse containers, etc. Locate skinned area mat scrapers, bases, canvas covers for field, lawn mowers, hose, wheelbarrows, etc. Provide toilets for force.

11. *Boiler room:* Located in basement of administration quarters, size 32′ x 12′ (main floor to ceiling). Equipment: main boiler, 940 gallon hot-water tank, summer hot-water boiler, fire pump, two house pumps, pneumatic system air pump, vacuum pump, sump pump, etc. 2,500 gallon oil storage tank located 2 feet away from foundation walls outside of boiler room.

12. *Electric service room:* Located in storage space at grade near main entrance. Fireproof throughout; concrete slab roof, fire door, main distribution switch board, lighting service entrance, switch, lighting transformer cabinet, power service entrance switch, and cut-out box.

13. *Transformer vault:* Adjacent to electric service room, same construction and door. Housing for public service transformers.

H. PIPE RAILING AND ORNAMENTAL IRONWORK

1. *Railing at outer edge of promenade* on facade to be 4′ high built-up W. I. railing with pipe handrail and standards for facade lighting. See details. Railings at ends of stands to be 1¾″ diam. 4′ high double with No. 8 gauge crimped wire mesh channel frames. Railings at front of box section same as above 3′ high.

2. *Separation railings:* For box section 1¼″ diam. 3′ 4″ high, single, no mesh.

3. *Deck railings around vomitories:* 1¾″ diam. 3′ 4″ high double with mesh as above.

4. *Ramp railings:* 1¾″ diam. 3′ 4″ high, double, no mesh.

5. *Railings at ticket booths at grade:* 1¾″ diam. 3′ 4″ high double, no mesh.

Note: All railings to be weld-connected.

6. *Mesh enclosure:* Fill in all arches at ramps with wire mesh, metal frames, similar to fence construction.

4. *Scoreboards:* Baseball scoreboard to be laid out on metal sidewalls (See F 2) 25° off centerline in left field. Overall size 31′ high by 38′ length, lower edge 15′ above field grade. Strikes, balls, and outs to be indicated by 24″ high numerals No. 12 gauge plates vertical slide counterweighted and pulley operated manually. Inning information and batters 24″ high numerals on plates suspended from inside hooks. Information on games between other teams in same league to include scores by innings indicated by 24″ high numerals. All lettering and figures white on black backgrounds. Provide overhead illumination for scoreboard use at night. Scoreboards for football to be located in duplicate, one at rear tower of north secondary entrance and one at rear tower of south secondary entrance. Both to be approved patented movable football scoreboards, about 20′ x 30′ length, with 24″ numerals and 24″ movable football symbol. Lower edge of boards to be 10′ above promenade deck level. These boards to be installed only for football season and removed after final game.

5. *Signs and lettering:* All the lettering and small sign work for doors, halls, team and toilet buildings, ramps, exits, entrance block and secondary gates, bleacher and stand ramps, and all individual numbers for seating in permanent stands and press and broadcast quarters on roof.

6. *Turnstiles:* Provide 31 registering turnstiles at main entrance and secondary gates. To be equal to sample. To be equipped with air shock absorbers that check arms each quarter turn making it unnecessary to release foot lever or make any special mechanical movement so that the arms can be turned. Must be designed to be put under control of gate keeper when required, who, by simply pressing down a foot lever, can stop the turnstile arms at any point. Arms to be broad aluminum protective. Furnish 5,000 record slips.

K. PLUMBING

Include: Cold water system, drainage system, fire line system, gas system, hot water system, house sewers, house pumps, all plumbing, all plumbing fixtures throughout the entire stadium, private sewer, roof tank water supply, soil, waste and vent piping, etc.

L. HEATING AND VENTILATING

Include: All steam heat for accommodation quarters noted, all ventilating indicated, etc.

M. ELECTRICAL

Include: Bell system, lighting for accommodations, lighting exterior facade of stadium, field floodlighting, and all required cables and wiring from transformer vault to fixtures, motors, etc. Provide all conduits required. Provide all lamps and fixtures noted.

OFFICE PROCEDURE, I.

By PARKER MORSE HOOPER

The second quarter of the twentieth century is witnessing not only a complete change in architectural design but also a gradual change from architecture as a profession to architecture as a business. Today, more than ever before, it is essential that an architect's office should be run in the most efficient economical manner. Too many architects have failed to realize that the success of their work depends as much upon the efficient manner in which it is handled as upon its artistic and architectural merit. Although a client may be satisfied and pleased with his building when it is finished, if he has suffered from the annoyance of delays, unforeseen extras and mismanagement of the job, he is not likely either to recommend his architect to his friends or to give him another job to do. We all know so many good architects who are not good business men, but can they be called good architects when their only virtue lies in the fact that they are clever and artistic designers? The conservative architect of the past generation looks with alarm upon the commercialization of his profession but if he wants to keep in the race and stay on the band wagon it is absolutely essential that he should reorganize his office into an efficient, well-run business.

The office of John Russell Pope has the enviable reputation of being one of the most efficiently run architectural offices in this country. After the expenditure of great thought and care based upon thrity years of experience this firm has compiled an Office Manual with which every member of the office must be thoroughly familiar. Upon this Manual the office procedure of this firm is based. The introduction to this Office Manual shows the important factors in the preliminary work on any job. Following these introductory pages is a diagrammic layout of the manner in which the work of this firm is handled. Under the title Office Routine and Procedure follows a complete description of the several departments of the firm and the manner in which different parts of a job are delegated to them.

OFFICE MANUAL OF JOHN RUSSELL POPE, ARCHITECT ROUTINE AND PROCEDURE

The purpose of this manual is to supply and provide information and help to new employees entering this organization, and to present members desiring information in regard to procedure. It is not intended as a document of rigid law but more as an elastic guide to office procedure, and is subject to revision from time to time.

PRELIMINARY WORK

In the inauguration of a job the client should be furnished with our standard questionnaire covering space requirements, site conditions, heating, ventilating and electric systems, etc., and this questionnaire should be followed up by the office contact man to secure as much definite information as is possible in the early stages of the work. A preliminary sketch layout of the design in plan and elevation shall be made for the purpose of securing a preliminary cube and this shall be submitted to the client in a tabulated form similar to the attached sample used on the Blank residence. A member of the administrative section, the general superintendent of construction and the chief draftsman should be called into one preliminary conference with the client to determine the general set-up regarding type of construction and basic materials. Dates for completing preliminary drawings should likewise be definitely determined. Preliminary cubage should be prepared in accordance with standard A.I.A. methods and issued to the client only after being recorded in the usual office bulletin. Secure a definite set-up of cash allowances, including special items such as sculpture, models, mural decoration, hardware, lighting fixtures, outside electric, water, and sewage disposal work, special heating and ventilating, special waterproofing against ground water

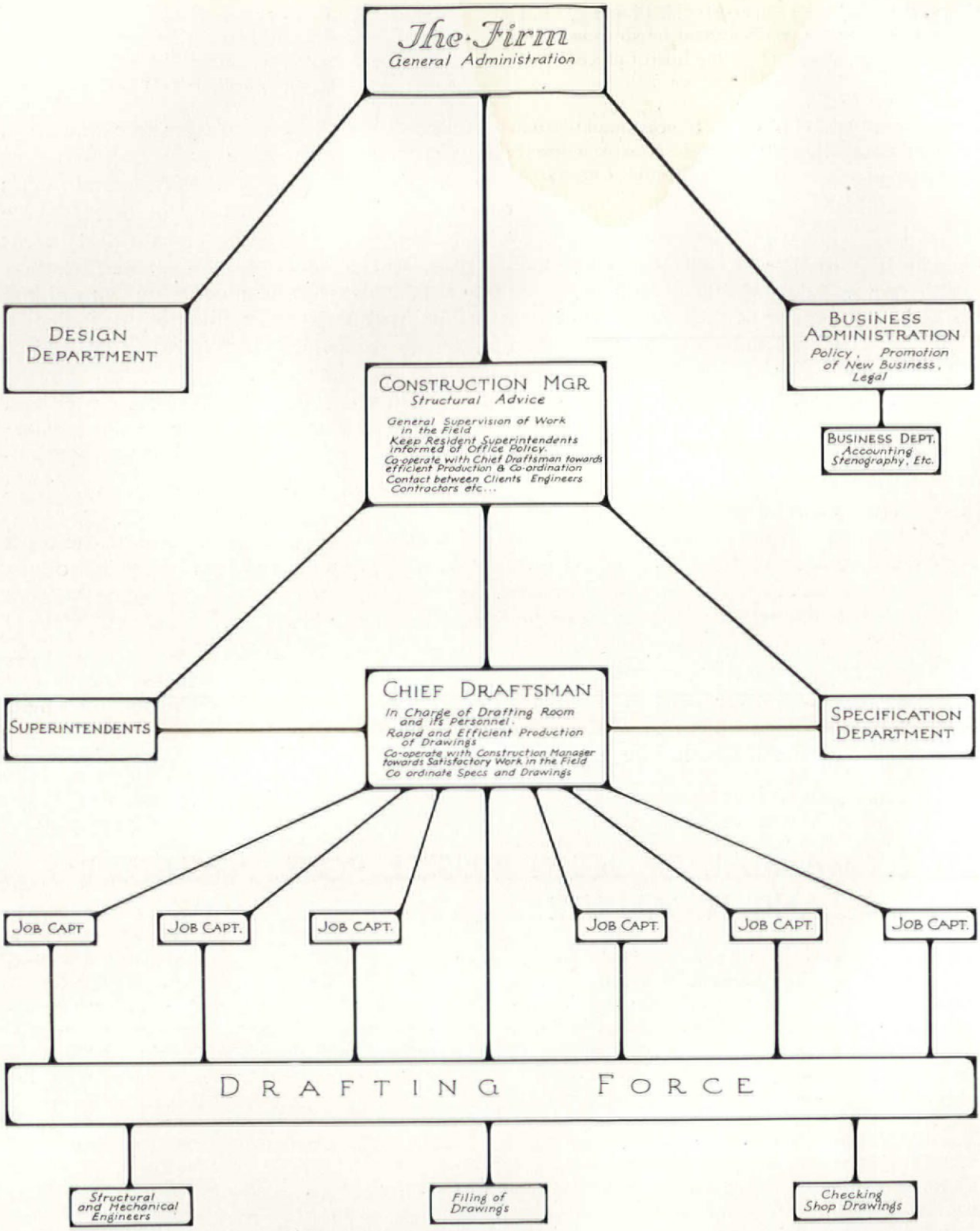


CHART OF OFFICE ROUTINE AND PROCEDURE

condition, engineer's fees, special bronze work, and in the case of residences special finish rooms. Final cubes should follow the same line of procedure.

CONFERENCES

All matters occurring in conferences should be noted and should appear at the earliest possible moment in the form of a typed report. Telephone conversations are to be considered as conferences and typed records included in the job history. At important meetings of building committees on public or semi-public buildings stenographic minutes should be kept of each meeting.

ESTIMATES

Preliminary estimates should be secured and submitted to the owner before proceeding with final working drawings. On securing this information the office is then ready, after a consultation with the chief draftsman, to set a definite date for the completion of working drawings.

FACTORS ESSENTIAL TO SATISFACTORY WORK

Time is a most important factor in all building operations. At no stage of the work should the architect procrastinate in the matter of securing decisions and expediting the progress of the drawings. The contractor is always most willing to place the blame for delay in construction work upon the office of the architect. Responsibility for progress in field construction must always remain with the contractor.

JOB CAPTAIN

In general it will be the responsibility of the job captain to handle the production of the working drawings and details with economy and with no unnecessary loss of time. Both in regard to plan arrangement and aesthetic design he should coach his men not to accept the first solution but to set up one or two alternates and quickly come to a decision in regard to the most acceptable scheme. In residence work, in particular, it is desirable to determine the elements affecting exterior treatment of the building well in advance of the development of details, in order that continual changing of the plans as the work nears completion may be dispensed with. Any overhang of upper stories over the lower should be established definitely by detail, and cornice treatment both at eaves and gable rake should be determined with sufficient accuracy to layout intersection of roof lines.

Decisions required from those higher in authority affecting design should be secured without delay. And where delays of more than ordinary duration occur, they should be made a matter of record in order that a strict accounting of the time expended on any job may be properly made at any stage of the work. Upon the letting of the contract the job captain should secure a schedule of dates upon which various detail drawings will be required for the successful prosecution of the work. He shall at all times keep a check upon the actual progress of the schedule.

MODELS

Models are frequently the cause of delay. Drawings required for models should be among the first details to be produced and should be placed in the modelers' hands at the earliest possible moment via the general contractor. The general contractor should thereafter assume responsibility for expediting the work of the modeling, and the specifications should always make it clear that such is to be the case.

SPECIFICATIONS

The specifications should always be drawn in close co-ordination with the design department. Particular attention should be paid to securing from the client, as far as possible, definite decisions regarding all matters affecting interior finish, extent of antiquing, glazing, etc. Items such as decorative painting, sculpture, wrought iron and bronze work should be put in the form of cash allowances rather than specified outright. On monumental work the line should be carefully drawn as to ornament desired to be carved by a selected stone cutter. Cash allowances must be very complete and in accord with both the client's and the designer's understanding. On large work, cost of five tons of extra steel shall be added to the cash allowance set up, and another five tons shall be called for as contingency allowance in the steel specification. Make a cash allowance for extra steel in residence work.

ADMINISTRATIVE SECTION

The Administrative Section consists of three members of the firm. All work of an administrative nature, interviewing clients, general business, administration and general design will be decided upon or executed by the administratives. All work of a financial nature, selection of lists of bidders, opening of bids, etc., will be done by this section. Inquiries arising in other architects' offices as to this office's approval of materials, contractors or subcontractors will be answered by this section. Orders for extra work and work omitted shall be signed by the Administrative Section.

OFFICE

CLERICAL SECTION

BOOKKEEPING—The Clerical Section includes the bookkeeping and stenographic departments, letter and contract filing, and telephone switchboard. The bookkeeping department keeps the records of all money transactions between the owners and this

office, between the owners and contractors, makes tabulation sheets of bid comparisons, sends out all bills for service, bills to the contractors for additional blueprints and specifications and makes up the office pay roll.

STENOGRAPHIC—The stenographic department writes all letters, reports and specifications. Of all letters at least three carbon copies shall be made. Of all reports of conferences within the office at least six copies shall be made. Of all reports of conferences held outside the office and all inspections six carbon copies shall be made. These various carbon copies are made on different colored tissue for various distribution.

LETTER AND CONTRACT FILING—The filing department has charge of all letters and contracts, the recording of all incoming and outgoing blueprints, specifications, samples, etc. Only the file clerk shall have access to the files.

All blueprints and specifications sent to contractors shall be accompanied by a receipt which the contractor shall sign and return. The receipts are in duplicate, one white and one yellow. The white copy is sent out and the yellow copy remains in the receipt book. When the white copies are returned they are to be pasted over the corresponding receipt. The yellow copy of all correspondence, after being initialed by persons concerned, shall be filed. The yellow tissue copy of all letters, reports and inspections shall not be removed from the filing department but is to be kept for ready reference. When a job is approximately done, letters shall be retired to transfer cases in the stock-room. All contracts and all comparison of bid sheets shall be filed separate from the letters.

INCOMING MAIL AND TELEGRAMS—All incoming mail and telegrams, except bids and personal mail, shall be opened by this section and stamped as to date and time. Where blueprints are included with a letter, the blueprint must not be detached from the letter, but the original letter and the blueprint shall immediately be sent to the Chief Draftsman. Where blueprints are received without a letter, they shall be immediately sent to the Chief Draftsman.

OUTGOING MAIL AND TELEGRAMS—The copies of all outgoing mail shall be distributed as follows: Copies of all letters shall be sent to the field sections, and one copy shall be given to the General Superintendent of Construction. The yellow copy of all letters shall be sent to the Chief Draftsman for initialing. All telegrams shall be handled the same as letters, except that a confirmation shall be sent by mail.

REPORTS—Reports of conferences and inspection shall be distributed to all needing the information.

CONTRACTS—This section shall receive preliminary and final estimates and shall tabulate them, taking particular care of a matter of additions or deductions of alternate bids, addenda or supplements, unit prices and the inclusion of all cash allowances. Where a contractor has neglected to give such alternates or unit prices, this section shall, whenever there is time, obtain them. Prior to the signing of the contract between the Owner and the Contractor the Contract shall be checked by the Chief Draftsman, General Superintendent of Construction and Specification Writer. This section shall file all Contract Documents.

FORM LETTERS—Printed form letters shall be used with supplements to the Owners, approval of subcontractors, to the General Contractor, and extra and credit forms to both the Owner and the General Contractor.

TELEPHONE—When the office telephone operator receives a call and cannot locate the person called, she shall make out the proper form and immediately place it on the person's desk. All long distance calls shall be recorded according to form supplied for the purpose.

DRAFTING ROOM

CLERICAL SECTION

This section takes care of the filing of all drawings and shop drawings, and card record of same; giving out numbers for sketches, drawings, addenda and supplements; ordering of and giving out all drafting room supplies; ordering of all blue-prints and photostats; doing all mailing, deliveries and errands; and issuing and collecting time cards.

BLUEPRINTS AND SPECIFICATIONS—Where issuing blueprints to Contractors estimating on a building, one set of blueprints of all drawings and one set of mineographed specifications shall be sent to each firm of General Contractors on the list of bidders without cost to them. Any additional sets of blueprints shall be sent from the blueprinter's direct, either C. O. D. or, where out of New York, by parcel post C. O. D. Where a General Contractor wishes additional parts of a specification, blueprint copies of the bond paper set shall be sent the same as drawings. Where a Contractor wishes complete additional specifications, mimeographed sets shall be sent him and the bookkeeping department so notified for billing.

Where issuing blueprints of scale drawings or details to a firm that has obtained a contract, four prints of each drawing shall be made, three sent to the General Contractor and one to the Architect's Field Superintendent. Three sets of specifications shall also be sent to the Contractor and one set of specifications shall be sent to the Field Superintendent. Any additional blueprints requested by the Contractor shall be sent from the blueprinter's Direct C. O. D.

All supplements to drawings and specifications and all addenda to specifications shall be issued

same as other drawings and specifications, except that a copy of all change supplements shall be sent to the Owner.

It shall be the duty of this department to see that all drawings, supplements and addenda have been initialed by the Chief Draftsman prior to sending for blueprints.

Where a drawing is revised instead of a small supplementary change the drawing shall be reprinted and issued to the General Contractor and Architect's Field Superintendent the same as a new drawing.

The blueprint orders shall be made out by this section *only*. A transmittal form shall accompany all drawings or specifications.

DRAWING FILES—The draftsmen will have access to all drafting room drawing files, but where certain drawings cannot be readily found this department shall obtain them as required. When the draftsmen have finished with drawings, they will put them back in the tops of the drawers. This Section shall assign one member to file all such drawings in their respective folders the first thing each morning.

SHOP DRAWINGS—Where shop drawings are given to this Section by the Job Captains, this Section shall see that same is either approved or disapproved and so stamped. One copy shall be stamped "Office Copy" and filed by this department and the remaining copies mailed to the General Contractor. A transmittal form shall accompany all shop drawings, noting on same the status of drawings at time of transmission; i.e., "Approved as Noted", "Disapproved", etc.

TRANSMITTALS AND MEMO ORDERS—All transmittal forms shall be made out by the Job Captains. The white copy is to accompany the material sent, the yellow copy is to be given to the Chief Draftsman, who, after checking same, will send it to the Job Captain. The Job Captain will keep same arranged as to date sequence till the completion of the job and then give it to the Clerical Section for filing with the letters. Memo Orders for all outgoing blueprints, specifications, samples, etc., will be made out by this section and sent to the Clerical Section for recording; after recording they shall be destroyed.

ORDER RECORDS—Order records shall be made out for all orders for supplies. The white copy being sent to the vendor, the yellow copy being kept by this Section.

CATALOGUE FILE—The catalogue files in the Specification Section shall be kept in order by this Section. All incoming catalogues shall be submitted to the Specification Writer before filing. One copy of each catalogue shall be properly filed unless the Specification Writer directs that certain products shall have additional copies for use of the Drafting Room.

DRAWING NUMBERS—This section shall keep a card index of all drawings, using white cards for sketches and working drawings, red cards for interior drawings and structural steel, green cards for exterior details and mechanical drawings, and yellow cards for full size details. All sketches shall be numbered from 1 to 99, Plot Plan 100, Working drawings $\frac{1}{8}''$ and $\frac{1}{4}''$ scale 101 to 300, Interior drawings, large scale 301 to 400, Exterior drawings, large scale 401 to 500, Mechanical drawings, Structural Steel 601 to 700, Full size details 1001. Supplements shall be numbered from 1. Draftsmen shall apply for the proper number.

SUPPLY ROOM—This section shall keep the supply room properly stocked with required materials for all sections. When the office is closed for the night the supply room must be locked.

Letter transfer cases shall be removed to the storage warehouse when the job is entirely done.

MAILING AND DELIVERIES—This section shall collect all mail at the end of each day and deliver it to the 45th Street Post Office. All parcel deliveries, collections and errands shall be made by this section.

DRAFTING SECTION

Each job shall be assigned to one of the Job Captains, who will be responsible for the completeness and correctness of all drawings and supplements. As a guide to the sequence of the work, attention is called to the Drafting and Specification Procedure Chart of this manual.

DRAWINGS—Drawings, except the contract set, are not to be made on a standard size sheet, but the sheets shall be of such size as will allow for proper detailing without cramping and without being wasteful when blueprinting. Contract set is to be on equal size drawings determined at the start of the job. In order that accurate record of progress be kept, the Job Captain shall plot the approximate number of sheets required and assign titles and obtain numbers as rapidly as any portion of the work is incorporated on a sheet.

In order that drawings may be kept uniform in appearance, standard indications shall be in accordance with the following charts of this pamphlet. Standard type of lettering; standard indication of materials; standard indication of door and window opening; standard indication of plumbing fixtures; standard method of dimensioning; standard method of abbreviation.

For titles use a rubber stamp and place in lower right hand corner only.

On all drawings for alteration to buildings, additions to old buildings, where new buildings are attached to old buildings, or where new panelling is placed in a room, place the large stamp "All Measurements to be Verified at the Building" just above the title stamp.

CHECKING—While drawings are being prepared, they must be checked with the checking list in this

pamphlet and all necessary items included. Prior to issuing to the contractors for bid the drawings shall be checked with the specifications, conference notes, surveys, and with mechanical plans for sump pits, floor drains, pump, machine and boiler foundations, pipe trenches, etc. Check all dimensions.

Two weeks before date of submission of drawings to bidders, structural and mechanical engineers shall be notified to proceed with final check and also check engineering requirements for reinforced concrete slabs on earth against water pressure. At the same time the structural and mechanical engineers start their final check the General Superintendent of the Field Section shall check the general construction. The Schedules shall be prepared by the Job Captain and Specification Writer and exterior and interior finish referred to the Designer for his approval.

Before issuing drawings to bidders, the Job Captain shall make a final check of the Schedule of Finishes, door schedule and window schedule.

ADDENDA AND SUPPLEMENTS—After the drawings and specifications are out for bid and before the contract is let, any additional specification information sent out is to be stenciled, mimeographed and termed "addenda." *After* the contract is let, any changes or additional information sent out is to be called a "supplement." Supplements to either drawings or specifications shall be made upon the standard supplement sheets. All addenda and supplements shall be numbered and dated and drawing number or specification page and paragraph numbers mentioned where change occurs. All supplements are to be marked for "Information" or for "Changes." Supplements shall be used for minor changes. When changes are extensive the old sheet shall be stamped "Superseded." Where addenda or supplements are issued, the drawing affected shall have the addenda or supplement stamp placed on the original drawing near the location affected. After the original set of scale drawings are sent out for bid, they shall *not* be changed, revised or corrected. Drawings are contract documents.

DRAWING, ADDENDA AND SUPPLEMENT NUMBERS—Each drawing, addendum or supplement shall have a number. The draftsmen shall apply to the drafting room clerks for such numbers and shall not assume such numbers themselves.

ISSUING DRAWINGS, ADDENDA AND SUPPLEMENTS—Before any drawings, addenda or supplements are to be blueprinted, the first time, the Job Captain shall ask the Chief Draftsman to inspect same and initial as checked. The Job Captain will give all drawings to the drafting room clerks for blueprinting and give them the required information as to number and to whom sent.

Change supplements are issued to secure estimates.

Drawing revisions or instructions to the field should not be made on the basis of a supplement until estimate has been received, and extra order is signed by Owner. Use form letter for transmission of Supplements to Owner. In case of extreme emergency requiring extra work the order should be put through to the Owner immediately on a cost-plus, unit price, or such basis as is agreed upon.

DRAWING FILES—The draftsmen will have access to the drawing files. Where it is not possible to readily find a drawing, notify the drafting room clerks. When returning drawings, lay same on the drawers on top of the drawing folders and the clerks will place them in the correct location.

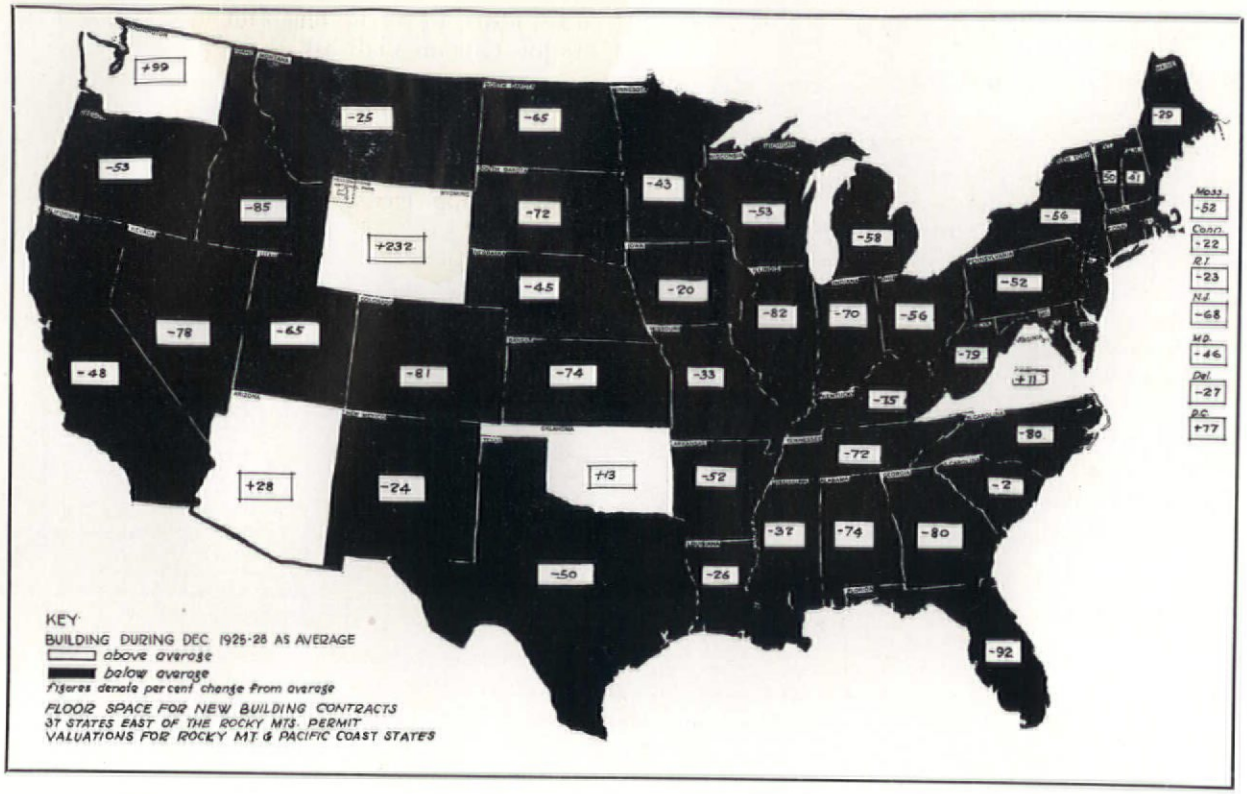
When necessary to have an old shop drawing or to file a new one, the clerks will obtain them or file them.

SHOP DRAWINGS—Shop drawings shall be checked and stamped, with "Resubmit" stamp, "Approved As Noted" stamp, or "Approved" stamp. One copy will be filed, other copies returned with letter of transmittal. Place on all shop drawings the large stamp "All Measurements to be Verified at Building."

CORRESPONDENCE AND TRANSMITTAL—The Job Captain and Field Superintendent are required to handle the larger portion of correspondence relative to their respective responsibility in a job. Do not dictate letters in the front office, phone the Office Clerical Section to ask for a stenographer. Use stenographer in place of long hand wherever possible. Where transmittals are used for the routine work of sending blueprints, or samples, they shall be made out by the Job Captain and given to the drafting room clerks.

The Job Captain shall keep a folder of all transmittals of drawings, all reports of conferences and copies of all letters pertaining to the development of the working drawings and details. Copies of all reports of conferences within and without the office will be given the Job Captain and Field Superintendent relative to their work, and they shall initial all correspondence affecting the job.

(The second half of this office manual will appear in the March issue. It will contain such features as "Hints for Draftsmen" and a "Checking List of Design Requirements.")



The December building map showed no appreciable change from conditions reported for the preceding month. Only six states reported larger volumes than average (December 1925–1928); of these only one, Washington, showed a gain in November over average.

BUILDING TRENDS AND OUTLOOK

PROSPECTS FOR RESIDENTIAL BUILDING

Residential building is the only branch of the construction industry that shows any promise of improvement during 1931. Even here whatever gain materializes will be only moderate since some further readjustment appears necessary in the light of abnormal vacancy conditions still existing in many localities, particularly in the high rental brackets in apartment houses and one- and two-family dwellings. There are doubtless many cases where families and individuals have doubled up—an occurrence genuinely characteristic of periods of general business depression. This condition has accentuated the causes and further aggravated the otherwise bad effects of protracted business debility.

That families forced by economic considerations to double up will take up abodes commensurate with their normal living standards when conditions permit is a foregone conclusion. Meanwhile, surplus space has been augmented materially, making more difficult the revival. The situation in lofts and offices is pretty much the same; occupants of manufacturing lofts have doubled up while desk space arrangements have been on the increase.

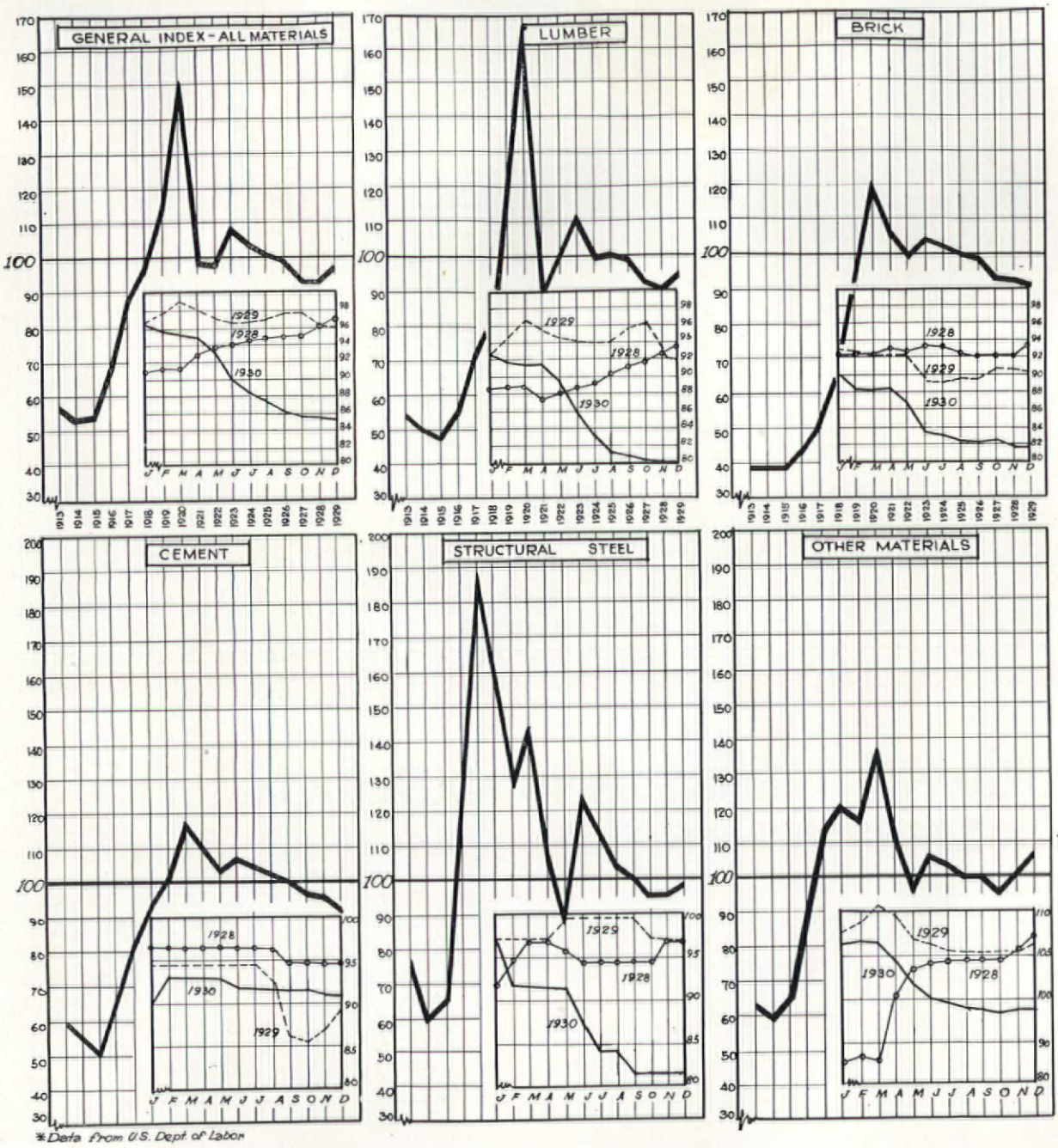
Thus surplus space, beyond what is normal, will have to be absorbed or otherwise worked off before any genuine recovery in residential building, or for that matter in general building, may be witnessed. The current year will be one of further readjustment which should be largely completed by 1932.

The readjustment began in 1929 with a sizable contraction in new residential building. It now appears that this decline which preceded the decrease in the volume of general business was somewhat delayed by the easy money conditions that prevailed. Under these conditions the large building activity of the period from 1925 through 1929 had anticipated the requirements too far in advance. Even a 30 per cent decline from 1928 in residential building was not sufficient to deflate the conditions;

(Continued on page 92, advertising section)

WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average = 100



*Data from U.S. Dept of Labor

The general index of building material prices, compiled by the U. S. Department of Labor, receded further in December. The decrease from December 1929 was slightly more than 12 per cent, while the decline from the 1926 average was about 16 per cent. The purchasing power of the building material dollar in December, as compared with the 1926 average, was about $1.19. For the seven-year period from the beginning of 1913 to the beginning of 1920 the general index of building material prices was substantially lower than the general index of commodity prices at wholesale. At the present time, although there has been a very drastic decline in new building volume, building material prices are still above the average wholesale level. If building volume does not show any improvement it is not unlikely that the index of materials will ultimately work lower; at least some further price readjustments between materials and the general index seem presaged.

ARCHITECTS' ANNOUNCEMENTS

CALENDAR OF EVENTS

February	Exhibition of etchings by William H. Wallace and lithographs by Vernon Howe Bailey in the Print Room (Room 316) of the New York Public Library.
Feb. 1-28	Annual exhibition of the Architectural League of Greater Miami, Florida.
Feb. 1-28	Exhibition of Persian Art, London (Burlington House).
Feb. 1-March 12	Art Exhibition, Royal Society of Painters, Etchers and Engravers, London (5a, Pall Mall East).
Feb. 21	Closing date for applications for scholarships for special students, School of Architecture, Harvard University. Apply to Dean G. H. Edgell, Robinson Hall, Cambridge, Mass.
March 14	Programs for the A. W. Brown Traveling Scholarship will be issued, calling for delivery of drawings on April 13. Apply to William Dewey Foster, 25 West 45th Street, New York City.
March 16-18	Seventh annual meeting of the Concrete Reinforcing Steel Institute at Biloxi, Miss.
March 28-May 29	Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).
March 30-April 4	House and Garden Exposition, Grand Central Palace, New York City.
April	Second International Congress and Exhibition of Sanitary Engineering and Municipal Hygiene, Milan, Italy. For information, apply to the Secretary General, Congress Internazionale di Tecnica Sanitaria e di Igiene Urbanistica, Milano, Piazza del Duomo 17.
April 3	Architectural students wishing to enter a competition for "the design of the most beautiful highway bridge in steel" are invited to submit to the American Institute of Steel Construction, 200 Madison Avenue, New York City, their preliminary sketches to be placed in judgment on this date.
April 7-May 2	Exhibition of Ideal Homes, London (Olympia).
April 14-16	Convention of American Institute of Architects, San Antonio, Texas.
April 18	Closing date for applications for Princeton Prizes in Architecture. Address the Director, School of Architecture, Princeton University, Princeton, N. J.
April 18-25	Fourth Biennial Architectural and Allied Arts Exposition, Grand Central Palace, New York City.
May	Exhibition of British Contemporary Art, London (Imperial Institute).
May 4-Aug. 8	Art Exhibition, Royal Academy, London (Burlington House).
May-August	Art Exhibition, Royal Scottish Academy, Edinburgh.
June 1-5	International Town Planning and Housing Federation Congress, Berlin.
July 10 Aug. 30	Vacation-study tour of housing, arranged and directed by The Garden Cities and Town Planning Association, London, in co-operation with the City Affairs Committee, 112 East 19th Street, New York City. For information, address Helen Alfred, Housing Chairman.
October 1	Closing date for entries for Lincoln Arc Welding Prize competition. Address inquiries to the Lincoln Electric Company. Cleveland, Ohio.
October-December	Art Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).

ANNOUNCEMENTS

Nimmons, Carr and Wright, architects, 333 North Michigan Avenue, Chicago, announce that Daniel Edwards Sawyer will be associated with them in the administration of their work.

Hermann Schoenfeldt, designer and craftsman, has opened a studio for interior architecture and industrial design at 180 North Michigan Avenue, Chicago, and would appreciate receiving manufacturers' catalogs.

Louis H. Gerding announces the opening of a new office at 708 La Salle Street, Ottawa, Illinois.

John Henri Deeken and Hubert Marion Garriott announce their association in the practice of architecture.

LECTURES BY HENRY S. CHURCHILL

Continuing through February on Thursday evenings will be the series of lectures by Henry S. Churchill, architect, at the New School of Social Research, New York City. The lectures will concern tendencies of modern architecture in America, stressing the new requirements and economic factors, materials and methods.

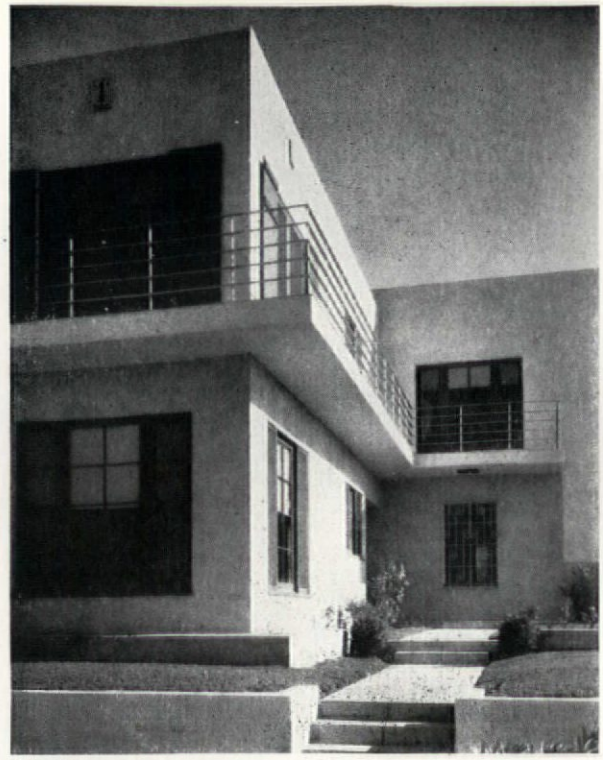
SMALL HOUSE EXHIBIT

The House Beautiful magazine announces the following itinerary for its traveling exhibit of photographs and plans of recently built or remodeled houses selected from its annual Small-House Competition: February 9–21, Indianapolis, John Herron Art Institute; February 26–March 9, Pittsburgh, Pittsburgh Architectural Club; March 12–26, Cleveland, Builders' Exchange Building; March 30–April 11, Chicago, Builders' Exchange, 228 North La Salle Street; April 18–25, New York City, Architectural and Allied Arts Exposition, Grand Central Palace; May 4–16, Detroit, Architects Exhibit Corporation, Barlum Tower.

THE PRINCETON PRIZES IN ARCHITECTURE

Two competitive prizes of $800 each, in the School of Architecture, Princeton University, are announced for the year of 1931–1932. The prizes will be awarded as the result of a competition in design to be held from 9:00 a. m. May 22, to 9:00 a. m. June 1. The winners will devote the following school year to the study of advanced architectural design, and such other subjects as they may elect. They are exempt from tuition fees.

Applications to enter the competition for the prizes must be filed on or before April 18, 1931. For application blanks and regulations governing the competition and award, address The Director, The School of Architecture, Princeton University, Princeton, N. J.



Borne Photo
LOS ANGELES

Hedrich-Blessing Studio
CHICAGO

THE MARCH ISSUE: APARTMENT HOUSES

The Apartment House to be successful must be rentable. It must have efficiency in planning, attractiveness in appearance, recreation facilities and labor saving conveniences that are compensations for living in the multi-family dwelling. A study has been made of these practical elements with a view to aiding the architect to plan effectively the new type apartment.

Henry Wright, lecturer at Cornell University and the University of Illinois on apartment planning, and associated architect with Clarence Stein on the Sunnyside and Phipps Apartment developments, will discuss the changing trends in apartment design. He will also indicate ways in which architects may associate themselves with apartment and other housing undertakings.

An extremely useful feature of the issue will be the collection of successful plans for the 1, 2, 3, 5 and 8 room apartment with critical discussion by Henry Wright, Arthur Holden and R. L. Davison. The comment will evaluate arrangement advantages, room sizes, desirability of duplex living rooms, kitchenettes, dining rooms and dinettes, and features that make for rentability and economy.

Recreation facilities for the apartment will be considered in detail, including playgrounds for children, space requirements for tennis courts, games, sand plots, recreation for adults, porches and roof terraces. With the information given the architect will be able to determine the amount of recreation space that is needed for apartments of various sizes.

Closets and storage space necessary to apartments will be analyzed from the angle of accommodation needs. What constitutes a compact closet? What is the value of cedar in the clothes closet? How should furs be stored? What are efficient doors for closets, medicine cabinets and kitchen cupboards? Every angle of closet planning and arrangement will be subjected to thoughtful consideration with illustrations and drawings of desirable solutions.

We believe that this issue of The Record will prove a distinct assistance to the architect in planning the small or large building for living accommodations. The illustrations will cover the entire country with emphasis on elements that have practical value to the architect.

JUSTICE ADMINISTERED

. . . in Rooms of Lasting Beauty

Interiors at Erie County Court House retain their fresh, clean beauty through long arduous service

PEOPLE pass in and out constantly; dust drifts in through open doors and windows. Corridors and rooms are crowded; careless hands leave finger prints, smudges. It's no easy matter to keep walls and ceilings in a public building always clean . . . light . . . handsome.

At beautiful Erie County Court House . . . as at hundreds of other fine modern buildings . . . the task is made decidedly easier by the use of Barreled Sunlight.

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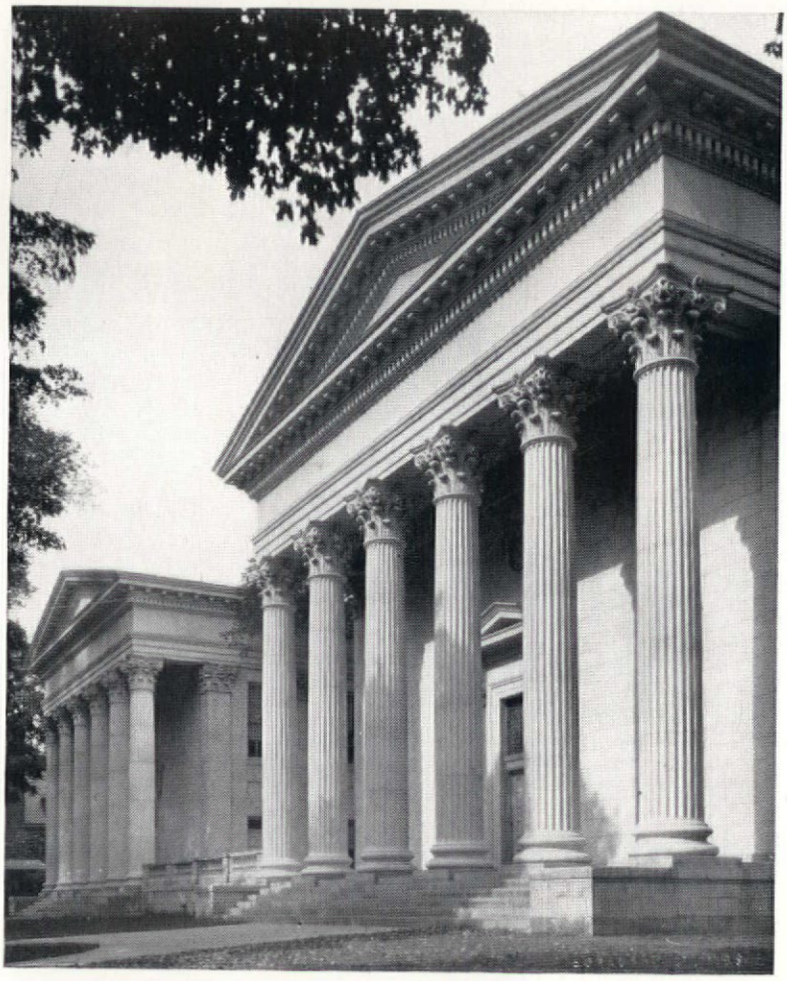
You will find our catalog in Sweets; but we should like to send you, for your own files, the new booklet, "For Interiors of Lasting Beauty and Cleanliness." Write for it.

U. S. Gutta Percha Paint Co., 22-B Dudley St., Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)



The distinguished exterior of the new Erie County Court House, at Erie, Pa., is fittingly complemented by handsome interiors in white and soft agreeable tints. The architect, Mr. W. T. Monahan, specified Barreled Sunlight, of which five hundred and fifty gallons were used.

Barreled Sunlight is now available in two forms, Interior and Outside. Write for complete information on Outside Barreled Sunlight—its more pronounced whiteness, richer lustre and marked durability.

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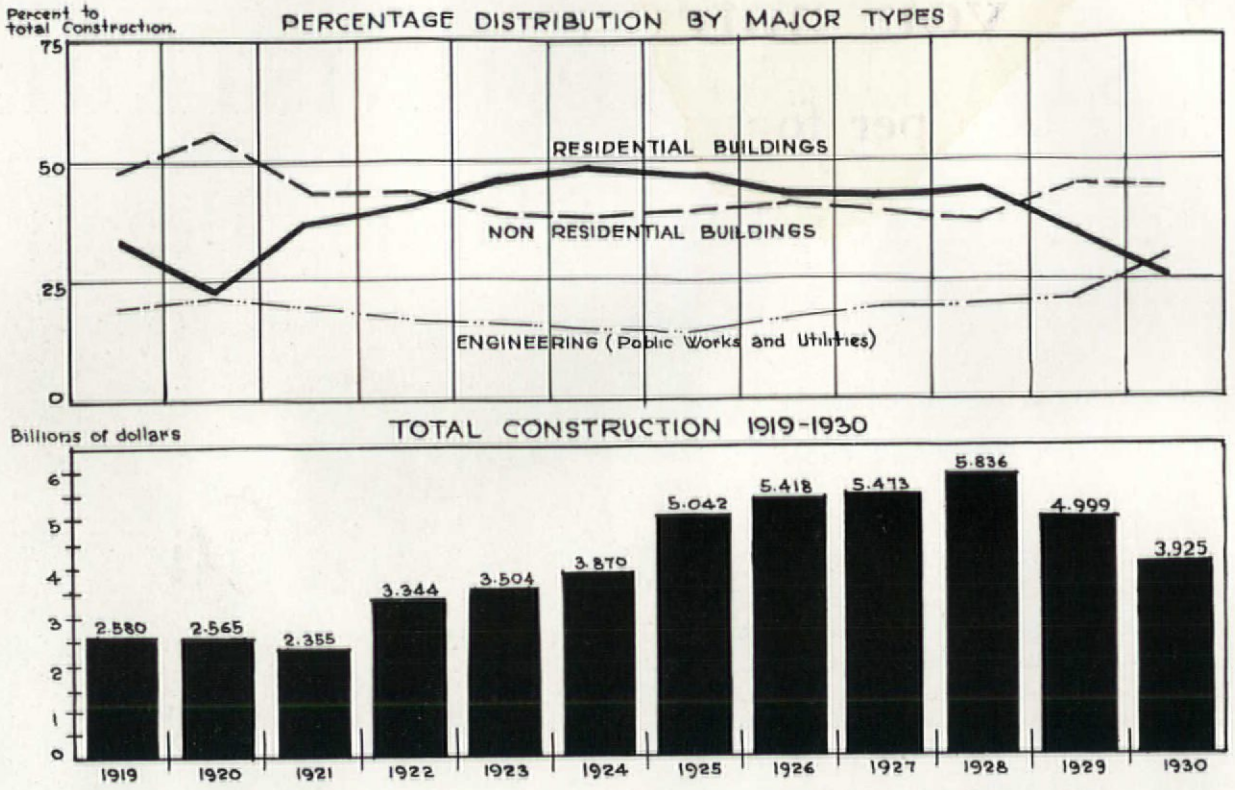
CONSTRUCTION CONTRACTS AWARDED IN 27 NORTHEASTERN STATES
1919—1930



Normally residential building represents approximately 40 per cent of all new construction. From this viewpoint it seems rather clearly indicated that residential building in 1931 will not attain its normal position of primary importance which will doubtless be deferred to 1932 or thereafter. For each of the years from 1922 to 1928, inclusive, residential building accounted for 40 per cent or more of the total new construction volume, having reached its maximum relative importance in 1924 when the ratio to total was 48 per cent and its maximum actual dollar total in 1928 when the ratio to total had dropped to 44 per cent.

(Continued from page 183, editorial section)

the additional decline in 1930, which amounted to 42 per cent from 1929, probably very largely accomplished this necessary end. Thus the year which has just closed showed a residential volume 60 per cent below the peak registered in 1928; in point of value one must go back to 1921 to find a total volume of new residential building lower than that which was registered for 1930.

Relative to total construction, residential building for 1930 was somewhat better than in 1920 when the volume of new construction was considerably lower than that registered in the year just closed. In 1930 residential building accounted for about 25 per cent of the value of all new construction undertaken, while in 1920 residential building represented only 22 per cent of total construction volume. That 1930 as a whole showed a higher ratio for residential building than was registered in 1920 is an encouraging sign since at midyear the 1930 ratio was only 22 per cent. This fact gives further proof to the opinion that 1931 will be a year of further readjustment between the major categories of construction with residential building showing a higher percentage of the total construction volume which, in value, will likely be not far different from that for 1930. Thus the current year will possibly show new residential building at from 30 to 35 per cent of all construction and in this respect should not be unlike the year 1921 when the aggregate value of all construction was considerably lower than the indicated total for 1931.

Normally residential building represents approximately 40 per cent of all construction. From this standpoint it seems rather clearly indicated that residential building in 1931 will not attain its normal position of primary importance which will doubtless be deferred to 1932 or thereafter.

For each of the years from 1922 to 1928, inclusive, residential building accounted for 40 per cent or more of the total new construction volume, reaching its maximum relative importance in 1924 when the ratio to total was 48 per cent and its maximum actual dollar total in 1928 when the ratio to total had dropped to 44 per cent. Thus there were seven

(Continued on page 94, advertising section)

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ON the recommendation of architects, Andersen now has a 3″ per foot sill slope on the new Andersen Master Frame of genuine White Pine . . . a sill slope 60% greater than usually found on window frames.

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Actual photograph showing Andersen's steep sill slope and chamfered blind stop, which insures perfect drainage

Model home at Amarillo, Texas. Architects: Berry and Hatch; Andersen Master Frames No. 604 from Amarillo Sash & Door Company

Andersen MASTER Frames

for a leakproof installation

(*Continued from page 92, advertising section*)

consecutive years when residential building was doubtless above normal from the viewpoint of relationship to total construction volume. For the first half of this period there was need for such large activity to supply housing facilities which had been deferred by war conditions and the readjustments which followed. For the latter half of the period production of housing proceeded at a pace which was distinctly out of line with other economic movements. The conditions which this maladjustment brought are those which, although somewhat delayed, contributed forcibly to the causes of the general business depression.

During the period of large residential activity the totals were swelled by the operations of speculative builders intent upon profits from the sale of their products. Though investment building proceeded apace it was the production of speculative projects that operated to upset the residential field.

Today this condition is materially altered: many speculators have been forced out of the industry by economic conditions; opportunities for profit on the sale of new residential properties are small. In consequence new residential building that will be undertaken during the current year will doubtless be dictated largely by investment considerations. In this movement the apartment house type will be of increasing importance where production and operating economies are more easily effected.

Lowered construction costs which are now variously estimated at from 10 to 20 per cent below a year ago will doubtless stimulate residential construction in sections where conditions of supply and demand are near normal. Such new building will in all likelihood make for lowered rentals, which in turn will affect existing rentals in older structures. Already evidences of this tendency are accumulating and this condition must be reckoned with as a part of the readjustment which 1931 will see in the building industry.

There is still large need for better housing for the masses whose incomes are low and for whom little new housing has been provided. The growing resources of savings banks, the increasing reservoirs of life insurance companies and building and loan associations, may find profitable employment in filling this urgent need. To the extent that better housing for less money can be provided for the masses during 1931 will residential building show improvement. Vigorous pressure for sales of consumable goods will never restore prosperity since prosperity depends upon the production of wealth. Housing of the investment types is wealth. Recovery from depressions always has been spontaneous in the past but only after the conditions which brought them about had been removed. The recovery from the present depression will be signalized when the causes which brought it about have been dissipated, and of these causes not the least important was speculation in residential building.

The semi-annual survey of the real estate market recently released by the National Association of Real Estate Boards covering 349 cities shows clearly some of the factors which must be more closely attuned to insure genuine recovery in building. Builders have found it increasingly more difficult to obtain funds for new building operations except in such cases where conditions of demand have indicated opportunities for profit without undue risk.

The survey discloses diverse tendencies in money conditions as between cities of different sizes. Cities having a population of 500,000 or more disclose supplies of mortgage money in excess of demands, but this surplus will not likely be made available unless genuine demands for space exist, so closely are the financial interests watching space conditions. In cities of smaller size the availability of mortgage money in excess of demands is lower while more than half of the cities of less than 25,000 inhabitants report money demands in excess of supplies.

Thus it appears that the smaller cities offer investment opportunities for the most part not to be found in the metropolitan centers. It is in these smaller cities that overbuilding reports covering residential properties show relatively the most favorable conditions. For single family dwellings the survey shows 62 cities of less than 25,000 inhabitants where building is normal; 29 cities where it is under current demand; and only 9 where there has been overbuilding. For cities over 500,000, 85 report normal conditions; none shows current building less than demand; while 15 show overbuilding. For apartment houses similar comparisons between the larger cities and those under 25,000 inhabitants are disclosed in the report.

The survey further shows that real estate sales have in most cities brought lower prices than a year ago, reflecting not only decreased values but also the effects of forced liquidation. At the same time there has been a marked downward trend in rents on one- and two-family houses, with almost 60 per cent of the reporting cities showing this declining tendency. For apartments only 33 per cent of the cities which reported show lowered rentals than a year ago. In the meantime foreclosures on investment residential properties, principally apartments, have been large and construction costs have declined.

Foreclosure acquisitions have put purchasers in a position of advantage over builders so far as opportunities for investment on capital outlay is concerned. Rentals on properties thus acquired can bring larger return than rentals on fairly similar conveniences in new undertakings. It is not unlikely that further shading of rentals on foreclosed properties, if competition for tenants makes it necessary, may in effect become an important ratarding influence upon new residential building.

L. Seth Schnitman

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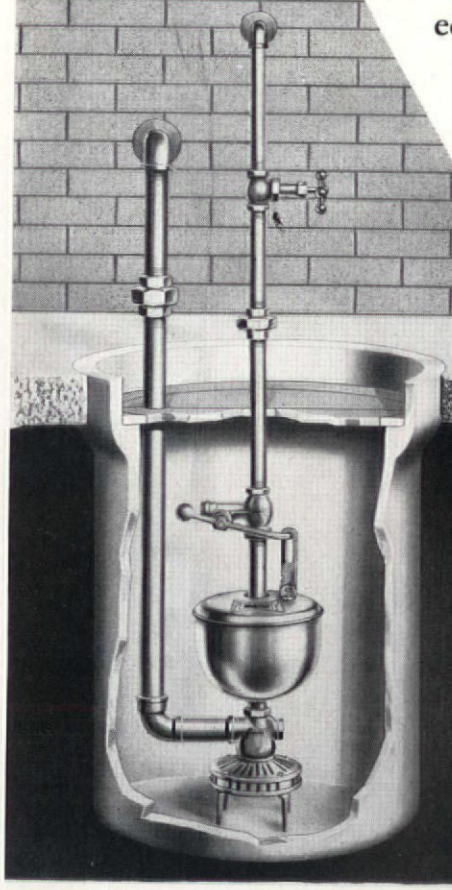

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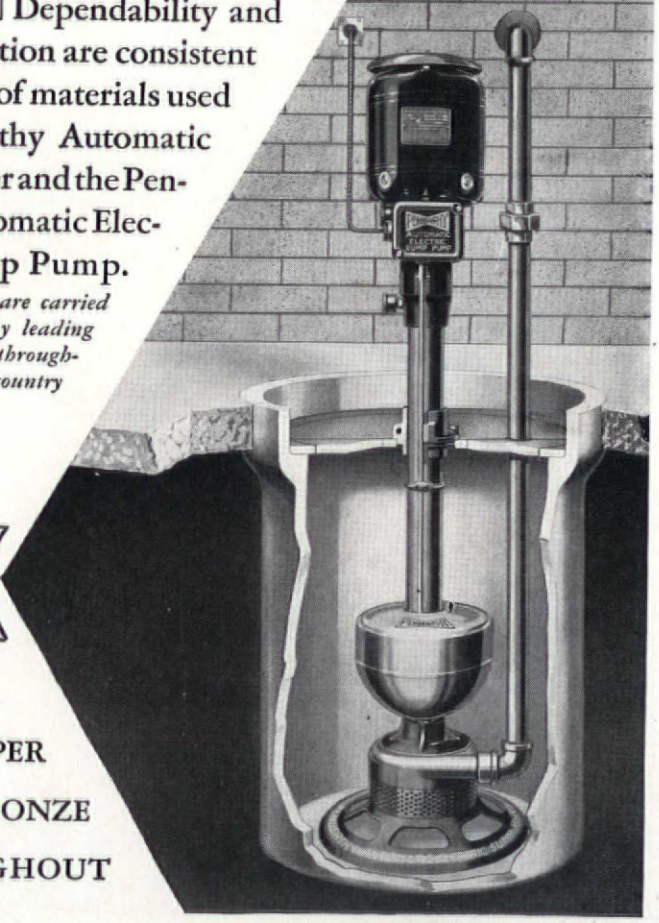

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FREDERICK WILLIAM WINTERBURN

Mr. Frederick W. Winterburn was born in Liverpool, England, July 30, 1849, and came to the United States with his parents at the age of four years. His family settled first in New York City, then in Coytesville, New Jersey, and finally in Edgewater, New Jersey. Here he lived for many years, taking active part in civic and church affairs. During the past thirty years he had his residence at 104 Riverside Drive, New York, and spent his summers at "Coprock", his Pocantico Hills estate. It was there that he died on September 2, 1930, at the age of eighty-one.

Early in the seventies he went back to England where he studied architecture at the Kensington Art School, London. At the age of 22 he returned to New York to practice his profession, having an office at 31 Nassau Street, New York, until about July, 1889, when he became associated with Mr. Charles W. Clinton at 32 Nassau Street. On May 1, 1894, Mr. William H. Russell of Renwick, Aspinwall and Russell joined with Mr. Clinton under the name of Clinton and Russell. Mr. Winterburn continued his association with this firm until he retired about twenty years ago.

In 1899 he joined the Architectural League of New York and became a member emeritus after twenty-five years. He was one of the oldest members of that association when he died.

During his association with Clinton and Russell, many of New York's large and important buildings were designed and erected, among which were the Mutual Life Building, Hudson Terminals, Apthorpe Apartments, Hotel Astor, Atlantic Mutual, 71st Regiment Armory, Graham Court, United States Express Building, American Exchange Bank, 60 Wall Street, Broad Exchange Building, 160 Broadway, 170 Broadway, Chesbrough Building, and many others.

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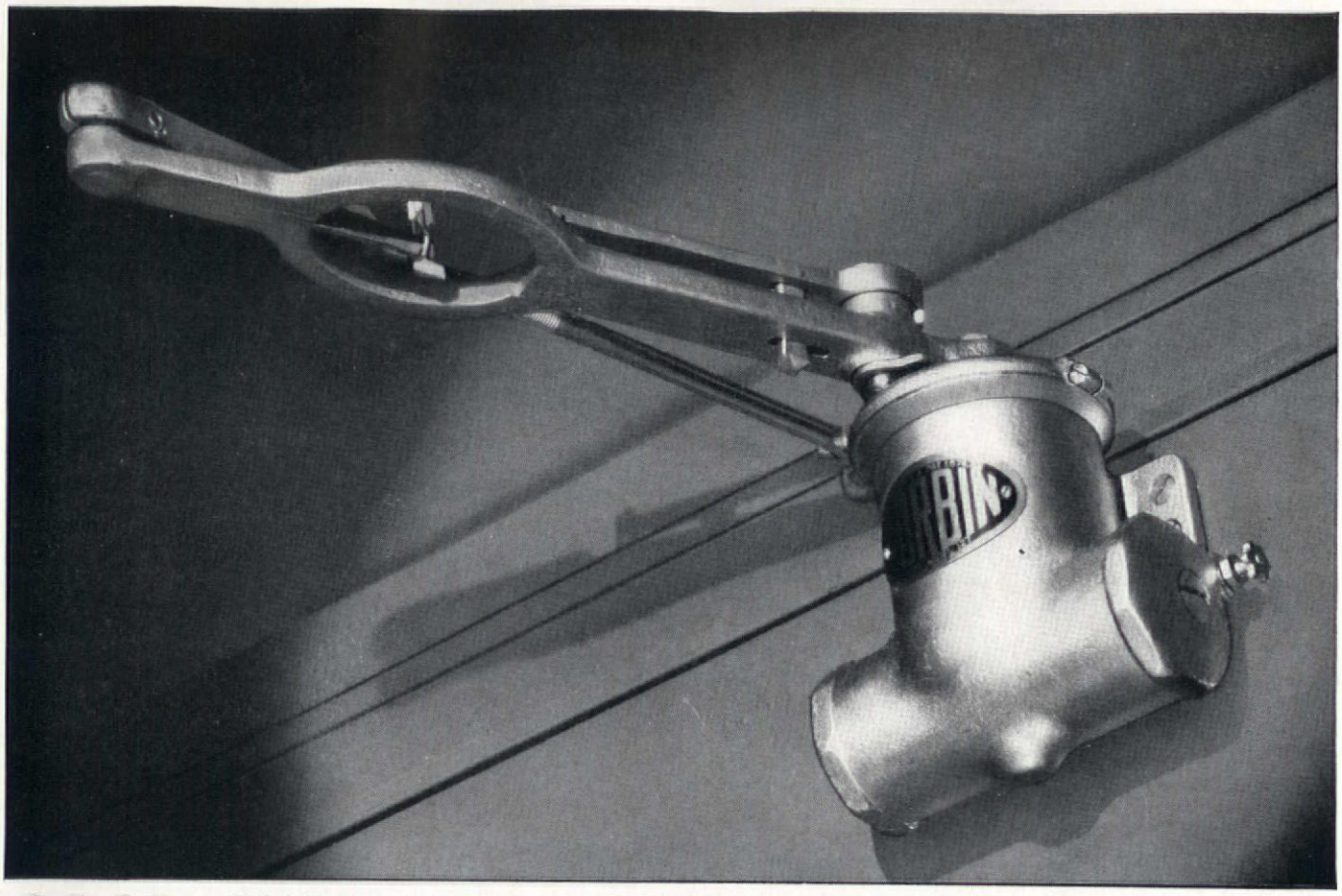

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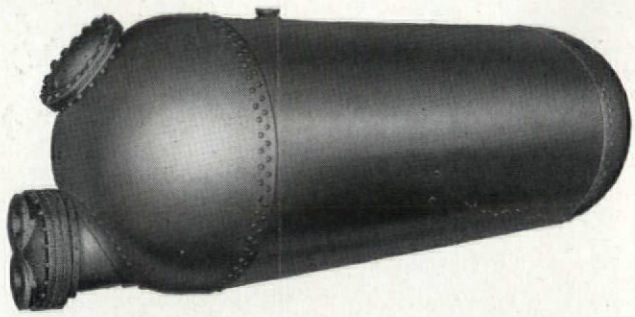

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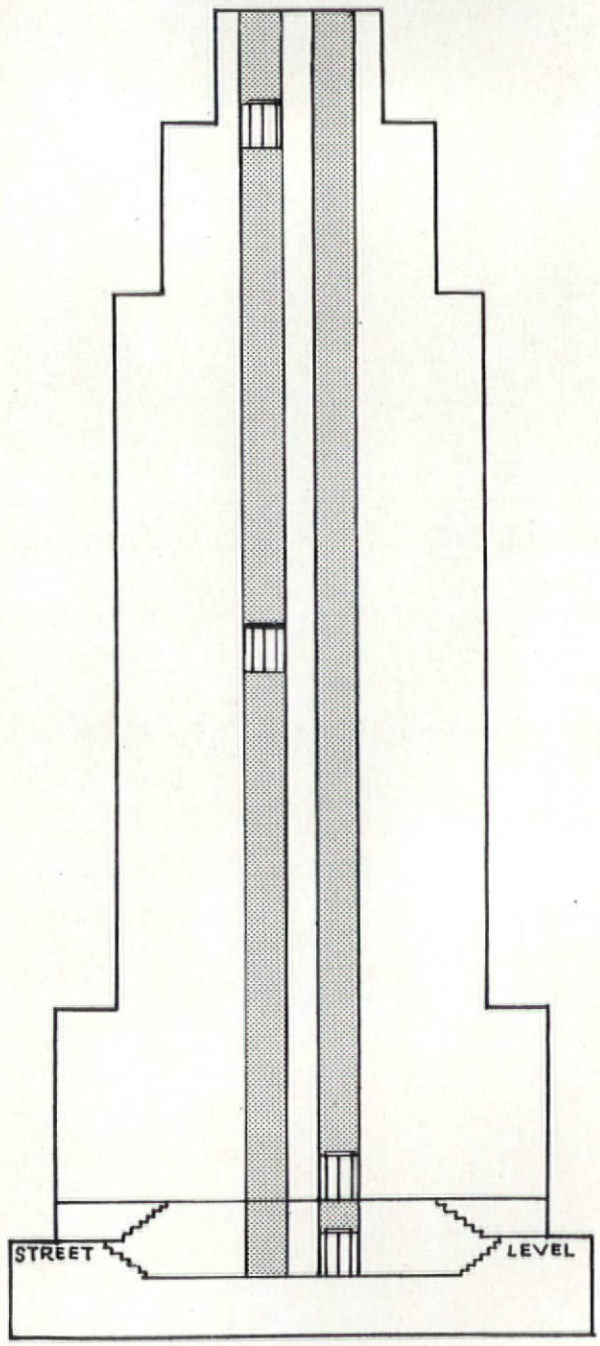
NOTES IN BRIEF

TWO ELEVATORS IN ONE SHAFT

An elevator of a new type with two cars operated separately in the same shaftway has been built by the Westinghouse Electric and Manufacturing Company and placed in regular service in that company's main office building at East Pittsburgh, Pa.

A study of the elevator layouts of certain typical projected buildings shows that the use of dual elevators in these cases would save floor space that could be rented for from $35,000 to $85,000 a year.



DUAL ELEVATOR OPERATION

In the right shaft the two cars are ready to ascend. In the left shaft the cars have reached their limit of travel and are ready to descend.

(Continued on page 100)

EXCLUSIVE DESIGNS BY

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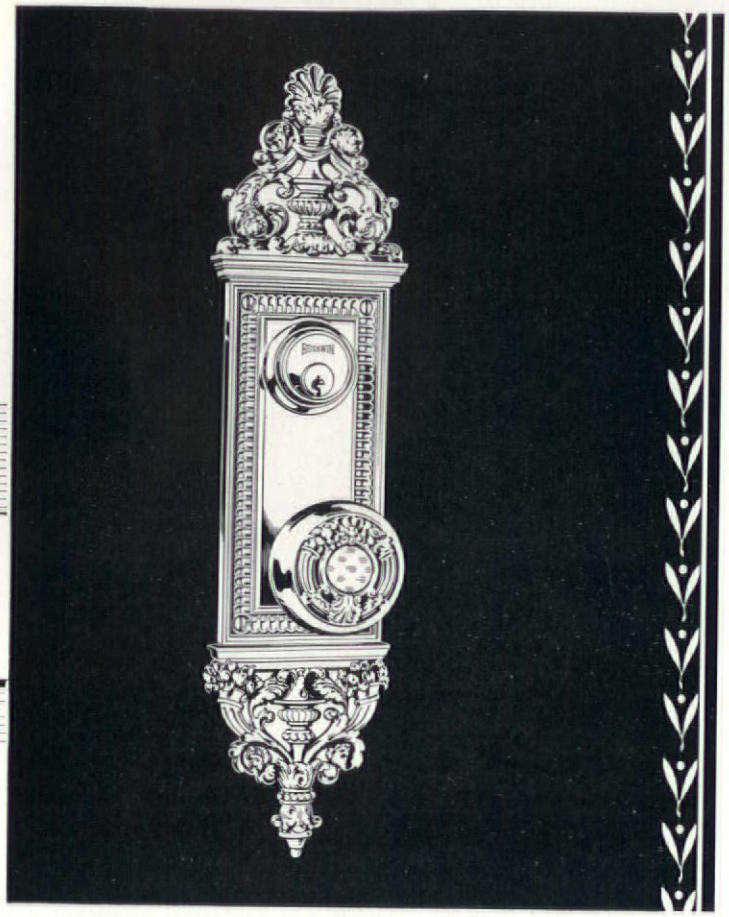

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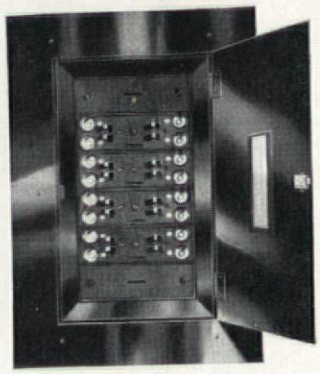

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Car operation is so timed that both cars will normally reach their upper limits of travel at about the same time, but if the express car arrives at its destination first, it is held there until the local car completes its run and starts downward. On the descent of the two cars, the same safety precautions apply—the lower car cannot run upwards towards the upper car, and the upper car will be stopped if it comes too close to the lower.

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(*Continued on page 102*)

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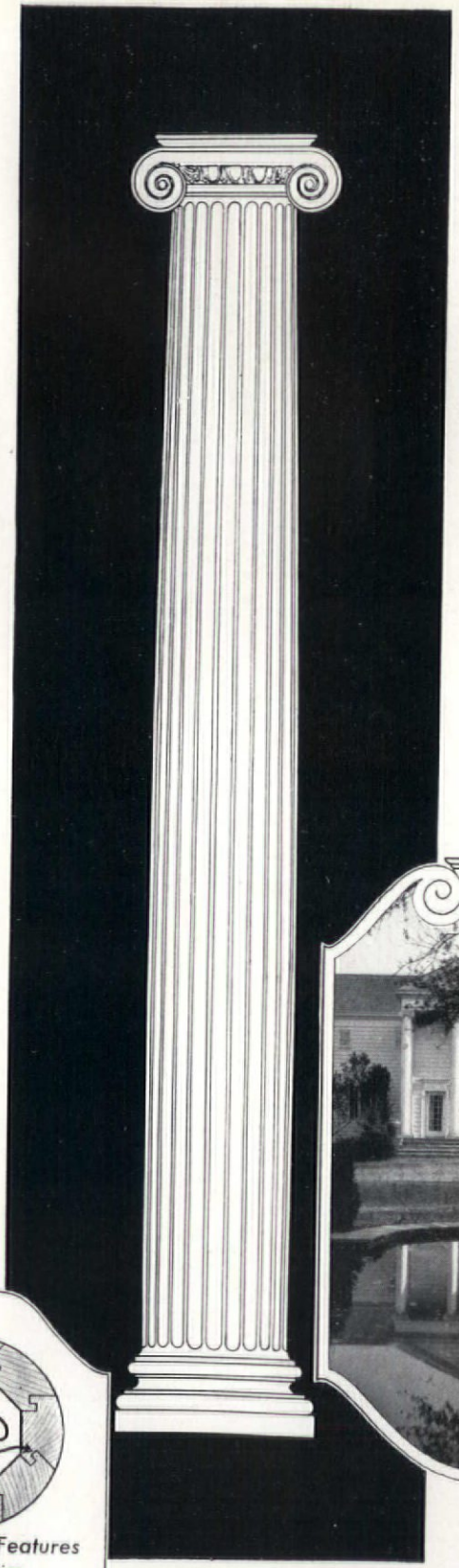

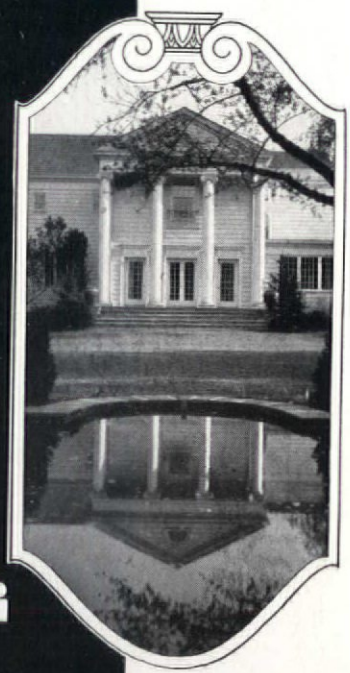

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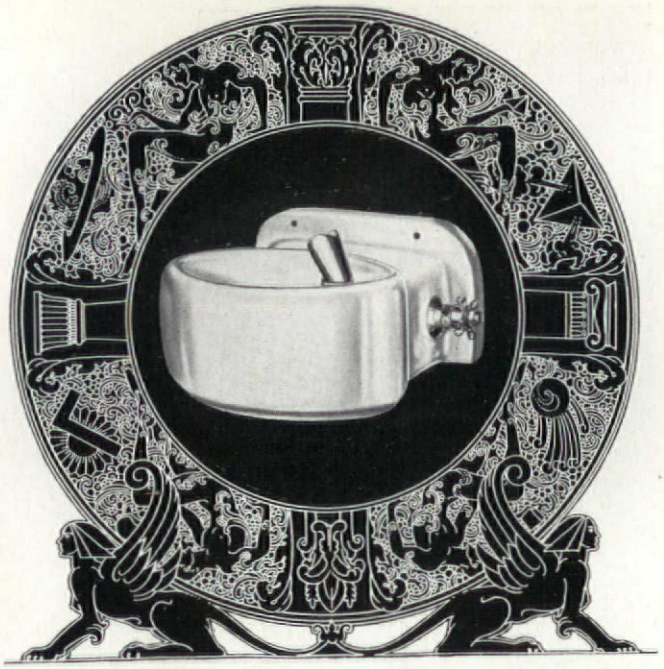

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GYMNASIUM, UNIVERSITY OF CHICAGO

Armstrong, Furst and Tilton are the architects of the Sunny Gymnasium at the University of Chicago, a view of which was published on page 82 of the January Technical News and Research article on Gymnasium Planning. The photograph was reproduced by courtesy of the Federal-American Cement Tile Co.

DESIGNER OF CANBERRA

Frederick A. Muhlenberg, architect, who compiled the list of architectural candidates for Rensselaer's Hall of Fame which appeared in the January *Notes in Brief*, writes that he wrongly attributed the design of Canberra, the capital of Australia, to Frank Lloyd Wright. Credit should have been given to Walter Burley Griffin as the designer.

A CORRECTION

The advertisement of the Peerless Unit Ventilation Co., Inc., which appeared on page 67 in the January issue of The Record and which featured the Floral Park-Bellerose School at Floral Park, Long Island, listed incorrectly the names of the architect and contractor. Credit should have been given to Edward Hahn, Hempstead, L. I., as architect, and to James McCullagh Co., Hicksville, L. I., as contractor.

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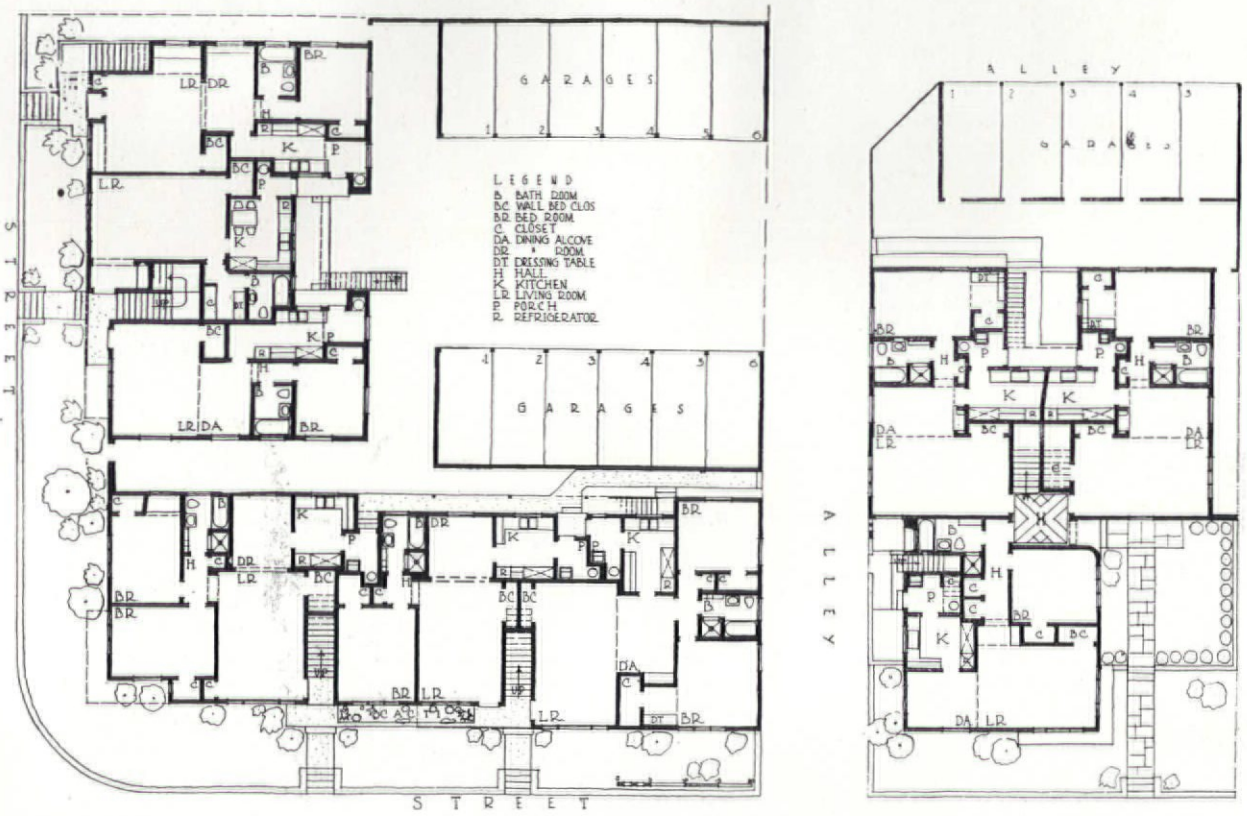

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THE ARCHITECTURAL RECORD

AN ILLUSTRATED MONTHLY MAGAZINE
OF ARCHITECTURE

VOLUME 69 MARCH · 1931 NUMBER 3

THE APARTMENT HOUSE

A Review and A Forecast

By HENRY WRIGHT, ARCHITECT

THE YEAR

Quantitatively: Despite the falling off in the building industry generally, fairly large additions to space accommodations in many cities, though in the aggregate only about 60% of previous recent years, are to be observed.

Qualitatively: The structures are substantial and highly mechanized; the average individual unit is of increased size. Few important additions to the basic principles of design are apparent. There is less evidence than in previous years of experimental trends in fitting the apartment to a wider field of usefulness and adaptability.

New York: The average unit has been increased in frontage width, assuming a more or less stereotyped facade of large windows vertically aligned. Efficient planning in relation to stair and elevator spaces is observable. Upper setback stories and penthouse towers show a variable handling. While plainly accepting the necessity for crowding each foot of valuable land to the limit, the form of individual design in New York does express, however, an expectation that the adjacent gaps are soon to be filled in with equally imposing units.

Chicago: Not so the typical Chicago high-class apartment, towering above its humble jumbled surroundings; its rigid bulk rises in full confidence that it is destined to remain permanently the *only* important edifice in its chosen block or district. We might well wish this could be the case.

Boston: A city in which the available supply of well-situated land is scarcely more adequate than in Manhattan, yet permits a conservative introduction of the elevator structure at heights scarcely double those of the surrounding older dwellings of Beacon Hill. For this we may thank the restraints of more adequate zoning rather than less urgent demands of the land owner.

California: Again this region contributes the most promising and almost the only examples of new design in which the efforts of the architect have been permitted to function without the handicaps of exaggerated land values.

Economically: There has been no more impressive example of the crude workings of the law of supply and demand than in the huge structures recently completed and now bidding for the practically non-existent patronage of a high-class clientele. Smaller projects could be and were promptly curtailed following the previously dangerous overproduction and the collapse of the stock market, but monster enterprises, requiring longer time both to promote and to complete, carried over the momentum of the building boom to a period when the market had entirely disappeared.

THE OUTLOOK:
For a forecast of the apartment house trend, the following facts must be taken into consideration:

1. The demand and the solution will be founded on an analysis of needs. In the past, just why two or three room apartments constituted the only "sure-fire" rental space was of far less importance than the problem of meeting "the demand" most expediently. These intuitive methods will be replaced by a closer study of changes in the social and economic factors.

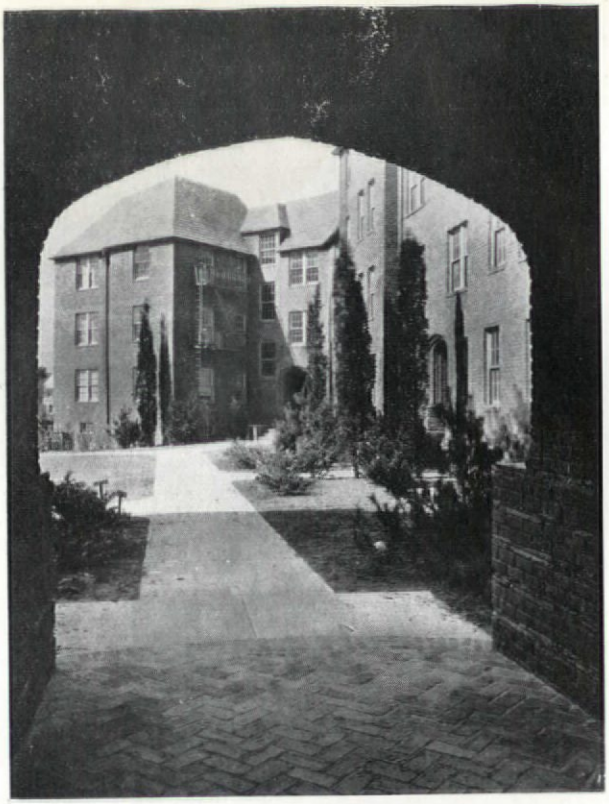
2. We have before us a liquidation of the artificial rise in land prices, just as we have had to liquidate overproduction in other fields where in the zeal of the first years of acceleration we overran or discounted the building needs of the future.

3. The effect of the general rise in realty values has been augmented by the failure of those agencies opening new areas and new avenues of traffic, even under the influence of accepted principles of city planning, to provide adequately and specifically for the apartments.

4. A resumption of building to meet the unquestioned demand for more completely serviced city dwellings cannot be postponed indefinitely.

BASIC CONSIDERATIONS

Land costs in proportion to population density: Present practice accepts standards of land crowding which are entirely indefensible either for needs or for good business sense. While zoning restrictions for smaller cities have included areas permitting 60 to 140 families per acre on small plots, the ordinary allotment is 4 to 8 per acre, for medium-size single detached dwellings and 12 to 15 per acre for smallest houses. The apartment in larger units, on a basis of about 10 to 15 families per acre for each floor of the apartment, may be most generously designed with adequate open space, in provisions for light and air equivalent or superior to the small house on lot sizes as indicated above. In the two groups of suburban apartments at



GROUP OF 2-, 3- AND 4-STORY APARTMENTS AT RADBURN, N. J.
ANDREW J. THOMAS, ARCHITECT

Radburn, N. J., designed by A. J. Thomas, 92 families are housed with generous provision of open space on a plot of 2.75 acres. The buildings average 3 stories in height, with 31 families per floor. This is less than 12 families per floor per acre, whereas the neighboring houses average about 9 per acre of net land within the block.

Under city conditions, as at Sunnyside, L. I., we have examples of 4-story buildings with courts 90 to 120 feet wide and 18 to 20 apartments per floor on plots of 1.25 and 1.5 acres respectively (including one half the adjoining wide streets). In the larger model housing projects of the Amalgamated Clothing Workers and others in New York, or the Marshall Field and Michigan Boulevard Gardens in Chicago, with coverage of 40% to 45% of the site, densities range from 20 to 25 families per floor per net acre. Room sizes average slightly more than 200 sq. ft. gross, and the immense central courts contain from 1 to 2 acres of open space in each case.

Limits of land cost: Residential land becomes prohibitive for use for single houses or even 2-story flats at about $125 per front foot, which is $6250 for a 50-foot lot 125 feet deep, or nearly $40,000 per gross acre. A 3½-story high-class apartment with 12 families per acre per floor and generous open space would require a land investment of only $1000 per family on this land at the limit of cost for small dwelling use. But in the past, land allocated to apartment use has been forced to take up price inflations of 200 to 300 per cent.

Moderate-priced non-elevator apartments should cost approximately $1100 to $1400 per room of 200 to 225 sq. ft. gross area, for building, and may consistently carry a land cost of $300 to $450 per room in commercial practice. Model apartments under non-commercial financing have been held to somewhat lower land costs. These costs should include the variable factors of site development and carrying charges during the building period. We may set up the two extremes as follows:

1. $300 per room, 4 stories high, rooms 200 sq. ft. gross, 40% cover, for urban areas.

2. $450 per room, 3 stories high, rooms 225 sq. ft. gross, 30% cover, for suburban areas.

This permits land charges per sq. ft. net of $2.40 under the city condition and $1.80 for the suburban condition.

The ordinary lot might be produced equally well for apartments as for houses. At $125 per front foot, 125 feet deep, we have only $1.00 per sq. ft. as the maximum price for normal single-family and small flat dwelling use. We would then have a leeway as between $1.00 and $1.80, or an 80% increase, for site development, more adequate public improvements, and provisions for common park and recreational space, and still permit the assumed allowance of $450 per room for moderate-price apartments of generous size, 30% land cover and averaging only 3 stories in height. There would be a 140% increase for 4-story, 40% cover model apartments.

Is there land enough in city and suburban territory to permit satisfactory space for apartment uses? We must turn back to *The Record* of March 1928 and 1929, and similar data and illustrations, to find a point of departure for the study of the development of apartments adaptable to reasonable land costs. Here we noted the beginnings of new forms of grouped dwellings either in large-scale unified projects for a high class suburban clientele or in low-priced model tenements in city areas. The examination of any city will reveal vast areas of now worthless blighted interior districts excellently adapted to convenient and comfortable living if or when the plots may be reassembled and replanned on a moderately large scale. This problem is coming forcibly to the attention of city councils, bankers and others, as the shrinkage of artificial values reveals the precarious basis of present tax returns.

As to suburban sites, the present situation is bringing to light no end of good land at sacrifice prices which are likely to assume more than temporary significance. From the architect's standpoint the problem involves more than mere service in building design, although the possibilities of improvement in design under freer site conditions should stimulate his utmost efforts. A suggestion of the problems and opportunities in this direction is found in the way Mr. Thomas has contrived to bring interest and domestic quality into his Radburn apartments by the juxtaposition of different groupings of stories and the organization of roofs and entranceways. The apartments, like the adjoining single-family houses, have access to the interior block park space.

Why should not the architect have the ability as well as the fundamental knowledge to lead in coordinating the larger elements of the problems of reclamation and readjustment? To determine the form and design of the community rather than the single development of the individual holding is the larger problem of the moment, and one in which the evolution of new and better forms of group habitation should become a major factor.

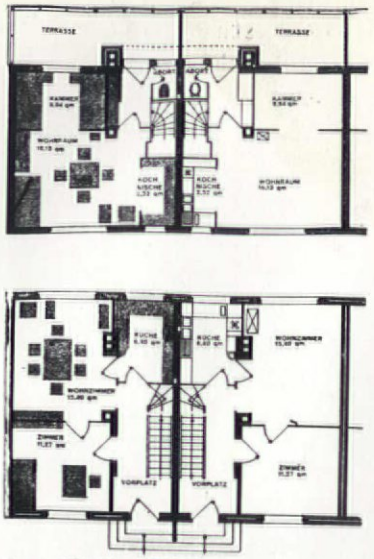
Neglected possibilities in grouped-dwellings: In any discussion of the merits and possibilities of the grouped-dwelling as against those of the apartment house, we are handicapped by a prevailing vagueness as to the exact borderline between these two types. It is generally understood that a project falls into one category or the other largely on the basis of whether services are furnished by the tenant himself or by a central management; hand-in-glove with this distinction goes the assumption that any large-scale development of three stories or more partakes of apartment status. But if we examine briefly the implications of a few of the developments in planning, construction and mechanical service, we find ourselves acknowledging a vastly larger and practically unexplored realm for the development of the grouped-dwelling.

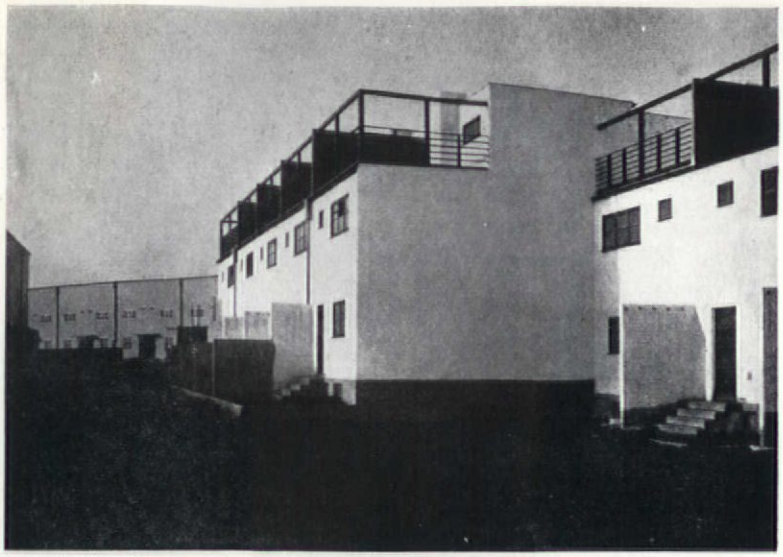
The most distinctive service performed by the smaller types of apartment in the past has been the provision of central heat. Two- or three-story buildings of almost identical form may be classed as apartments or as flats on the basis of whether or not heat is furnished. Many fundamental problems of large apartments concern service in heat and hot water. The size of an efficient apartment group may depend more largely on this factor than on any other. Yet this problem of heat may become a less determining factor in the future than in the past. Heat is logically a utility to be furnished on a community basis. It would then apply alike to the house or to the apartment. The presence of individually operated coal or even oil-burning heating plants in houses is a mark of arrested technical advance which should shortly give way to more efficient forms of distribution on a community basis.

With central or individually automatic heating service placing the grouped-dwelling on a parity with the apartment, the next distinction in dwelling types will be found in the matter of interior janitor services. The first advantage of the grouped-dwelling over the detached house is a better use of ground space. Moreover, in lower forms, available for use in groups of a maximum height of 2 stories to the living floor, it is possible to retain two important advantages of the detached house: first, to provide ready access to individual outdoor garden or roof space for every family unit; and, second, to eliminate all internal halls and stairs which must be used in common.

All forms of dwelling accessible through their own individual doorways to the outside public approach should be classed together as differing in fundamental principle from those forms accessible only by interior common space.

STREET AND GARDEN VIEWS OF 8-FAMILY APARTMENTS AT RADBURN, N. J.
CLARENCE S. STEIN, ARCHITECT





Courtesy of Das Neue Frankfurt

Single-family row houses at Frankfort with the third floor arranged as a small kitchenette apartment (which can be sublet) with roof terrace facing interior garden court.

ERNST MAY AND E. KAUFMANN, ASSOCIATED ARCHITECTS

Recent English housing developments have been marked by experiments in grouping flats and 2-story dwellings in the same building, thus adding another story to the space accessible by the individual stairway. That is to say, the space ordinarily occupied by identical flats on three stories with common stairs would be arranged as one flat on the ground floor with two 2-story dwellings above, each having its individual ground-floor entrance. This principle has been generally applied in England to the upper four floors of 5-story buildings by employing a central unenclosed stair and outside balcony access to the living floors of the two upper tiers of dwellings at the second and fourth stories. Germany has built thousands of otherwise-single-family row houses with "penthouse" apartments for each house. One half to two thirds of the third floor space is arranged as a small kitchenette apartment with open-air roof space facing toward the interior garden court of the block.

Thus we may have grouped-dwellings in buildings three stories high where individual services and access may be provided on the basis of community heat, individual automatic water-heating, mechanical refrigeration, incinerator shafts and internal private stairways, leaving no common services except yard work and repairs. Such buildings, without certain additional service features, should not be classed as "horizontal" apartments. Equally intriguing problems, however, are presented in the design and arrangement of horizontally grouped few-storied dwellings, adaptable as alternatives for the completely detached individual house. The possibilities of architectural interest on sites with varying topography are almost unlimited.

We have seen that the transition from dwelling to apartment does not come necessarily where we have tended to accept it—with an increase from two floors to three or more—and that the privacy of individual houses, together with superior access to recreation space on roofs or in gardens, may be combined with the economies of greater heights. We find, then, that the borderline between the two types has been pushed back in many cases until we reach that group of planning features and comparative luxury services which require central management or maintenance, and whose arbitrary inclusion or exclusion may often be the basis of deciding whether a given project shall assume the form of grouped-dwellings or of apartments. There are still many factors of convenience which may be incorporated in

Ewing Galloway

Low cost elevator apartments built for Amalgamated Clothing Workers

GRAND STREET APARTMENTS, NEW YORK CITY
SPRINGSTEEN AND GOLDHAMMER, ARCHITECTS

either type. These include community assembly and recreation rooms, day-nurseries and kindergartens, central garage facilities, and the provision of apartment suites with flexible capacity.

Evolution of service factors in apartments of few stories:* The kinds of services required in lower types of apartment buildings are necessarily different from those of many-storied buildings. The tall apartment is necessarily more complicated; it is usually so related in plan to the shape and extent of its site, because of relatively complete coverage, that the development of definite types and standards of planning is not evident except in relation to competitive units within a single local area. The extent of services provided is more complex and varied. A study of the requirements of services in lower types, particularly in large scale projects, is therefore not only worthwhile in relation to the anticipated increase of problems in this field, but cannot fail as well to call attention to similar problems, though differently expressed in the taller structure.

Influence of elevators: New large scale apartment groups have recently been completed in the 6-story elevator class. This has been the chief factor in New York speculative building, owing to the fact that tenants who first refused to walk up more than four flights of stairs have more recently set the limit at three flights. However, the New York building laws permit 6-story dwellings in non-fireproof construction and the New York builder, accustomed to reaching this limit in the

*The underlying factors in the design of walk-up apartments were set forth by the author in *The Record*, March, 1929.

old days of non-elevator building, naturally carried over these traditions of cheap building into the push-button elevator era.

The most important contribution of the year in the field of low-cost elevator buildings is the full block of 6-story apartments built for the Amalgamated Clothing Workers under the authority of the New York State Housing Board, at Grand Street, on the lower east side of New York. This is the third Amalgamated development, and the series forms an important link in large-scale construction of non-commercial projects—from the original large Bronx block of 5-story walk-up apartments in 1927 to the present fine group of elevator units. The architects of all three projects were Springsteen and Goldhammer.

Another very large construction, non-commercial in respect to current standards of site-utilization, is now under way, covering two city blocks originally a part of Sunnyside, in New York City. This group, being built for the Society of Phipps Houses, is particularly significant for this study as it combines in one project almost equal areas of 4-story walk-up and 6-story elevator units. The total number of rooms in the latter is greater, due to the additional height. The project presents many points of interest, some of which are discussed under another heading. Clarence S. Stein, as architect, is chiefly to be credited for the attempt to combine the two kinds of apartments in one block. The decision was reached only after very careful study of the construction and economic problems. This combination of two heights of buildings will have the very great advantage of relieving the group of the ponderous institutional aspect which has marred the effect of many large projects grouped around a single large interior court.

Influence of new construction methods and materials: Somewhat extravagant claims have been made of the cheapness with which new forms of smaller houses could be produced in quantity under factory methods, forgetting the fact that we cannot bring our house home and stand it at the curb like an automobile, but that it must be fitted to a scheme of community building and public utilities which are far from being turned out in factory quantities. Improvements in this line should be as effectively applied, and often more so, to more economical forms of group housing. These offer more ready application of quantity standardization and more feasible conditions of assembly and erection into efficient living units. It is the multi-family house that would be more largely relieved of its present unsatisfactory communication of noises, fire hazards and other group limitations due to older forms of construction, mainly inherited from a house-building age. A study of recent housing in Frankfort, where 11,000 units have been completed since 1925 under the direction of Ernst May, city architect and town planning officer, and built with structural elements manufactured in the municipally-owned research plant, will show to what extent these advantages can be applied equitably to both single and multi-family dwellings. The increased use of large glass surfaces is more noticeable in the latter. The individual house, on the other hand, has gained by the application of the same technique of space-saving, built-in furniture and appliances, which, with us, have been promoted primarily in connection with the apartment.

PLANNING FOR GREATER USEFULNESS: The elements of service and construction thus far discussed concern only the minimum or utilitarian functions of the multi-family dwelling: provision of access and circulation, delivery of supplies and disposal of refuse, and a minimum of physical comfort in matters such as heat. (How long will it be until the self-respecting apartment must furnish humidified, laundered air, and a summer temperature like that of the movie cathedrals?) But to these things is being added a formidable and diversified list of amenities, accessory to the needs of habitation only, whose absence may soon become a factor in turning away prospective tenants—a rea-

8 and 4 family apartments with complete self service at Radburn, N. J.

CLARENCE S. STEIN, ARCHITECT

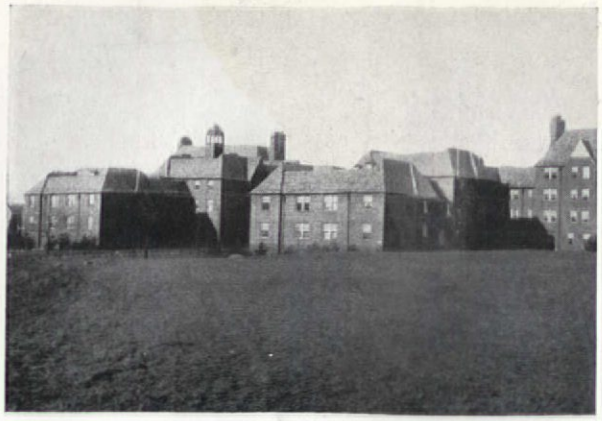
sonable degree of quiet from the neighboring radio; out-of-doors vistas that are reposeful and inviting; access to the health-giving agencies of sunlight and fresh air through the general use of balconies, roof terraces, and cubicles for sun-bathing; convenient parking and garage facilities. Such elements may, through proper planning, be provided in the small apartment operation almost as readily as in the largest project.

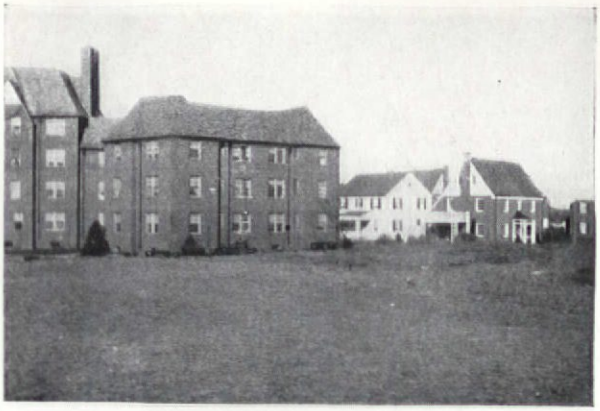
Community Features: Other elements of a community or social nature, however, bear a close relation to the size and resultant population of the housing project, and can be maintained only where these are reasonably large. Nursery schools will doubtless be increasingly related to projects of sufficient size to permit their practical operation; so will day-nurseries for children of mothers who are employed or otherwise taken out of their homes during the day. The whole range of more or less familiar community rooms and gathering places—auditorium, gamerooms, playgrounds for children and adults (so located as to be least annoying)—these become both practical and necessary with the increase in size of the apartment project. Coordinated retail store facilities, as well as communal laundries, kitchens and restaurants suitably located in basements or on roofs, are possibilities for lessening the expense and drudgery of housekeeping. And if we provide for the care and education of the child, why not take account of the leisure hobbies of the adult? One of the things most needful in apartment house living is a place to tinker; why not rooms for repairing the family radio, for hammering and sawing at the new book-shelves, for painting the kitchen chair? How many amateur photographers would bless (and rent from) the management which provided them a dark-room! These are a few of the possibilities for bringing the basement to life; it goes without saying that any spare planning intelligence can find odd jobs to do in the organization of space for suitable storage of trunks and household impedimenta, in the provision of perambulator and bicycle storage rooms.

Flexible treatment of living space: The planning of the individual apartment suite itself is susceptible to more imagination than has been bestowed on it, with a view to bringing it closer into line with the changing practical needs of families.

The guest room and the maid's room have been forced out of existence by our contracting space provisions. Larger apartment projects can, as some do, readily provide a number of single rooms and baths available to tenants by prearrangement for their use.

Apartments for those with summer seashore or country habitats: Even among people of moderate means there are many who prefer to have a small city apartment and a real country place, to an intermediate suburban





Larger apartment groups at Radburn: N. J.
ANDREW J. THOMAS, ARCHITECT

home where commuting is continually necessary and yet does not afford a real relief from city existence. Especially for large families it becomes difficult to maintain adequate space in the city, where rents must continue in force at all times. Might it not be possible to arrange some parts of an apartment project so that two, four, or more apartments, say on two adjacent floors, could be expanded or contracted like first and second class on shipboard? Thus the group could be adjusted by proper prearrangement and accounting for the use of the exchangeable space to suit the varying needs of the occasion. This would be a particular help in connection with families having young members at the marrying age.

Another possibility is an apartment so arranged that one room can be shut off with the more private and individual possessions of the family, and the other rooms sublet for the summer. An extra bath and direct access from a foyer would make possible the occasional use of the room by a member of the family when in the city during the period.

Future trends: In past years the discussion of this subject has centered upon the relative merits of the single-family house and the apartment. To many the single-family house has connoted the detached and preferably individually-built structure, which has been fostered both because of its sentimental associations and its adaptability to the business of producing lots. The choice, however, would now seem to shift to one between a casual procedure on the one hand, whether in relation to the single unit or the repetitive, speculatively-built house, and the technically guided group-dwelling on the other. In the former we have the prospect of new modes in style and improved materials, the flat roof and other changes which, casually handled and added to the crude efforts of the past, will either increase the haphazardness of our individually-built neighborhoods or add to the monotony of our speculative rows. Our only hope of averting this deplorable prospect is the intervention of technical skill in adjusting these changes to the purposes and benefits of group arrangement. Such group arrangement should find the logical and necessary adjustments between freedom and orderliness, which will be more likely to extend the independence of individual home units upon an economic basis than can be anticipated under a continuance of our present wasteful practices. Technical procedure may be counted upon to evolve a better adjustment of costs in regard to the economic relation of public utilities, habitation space, and service provision, while popular choice may be left to determine the merits as between the more independent forms of grouped individual units, limited to a few stories, and those more compactly organized forms of apartments which require joint participation in their service and access features.

Ewing Galloway

These apartments are cooperative, built to replace old tenements on lower East Side of New York. Rentals are $12.50 a month for each room.

GRAND STREET APARTMENTS, NEW YORK CITY
SPRINGSTEEN AND GOLDHAMMER, ARCHITECTS

Gottscho

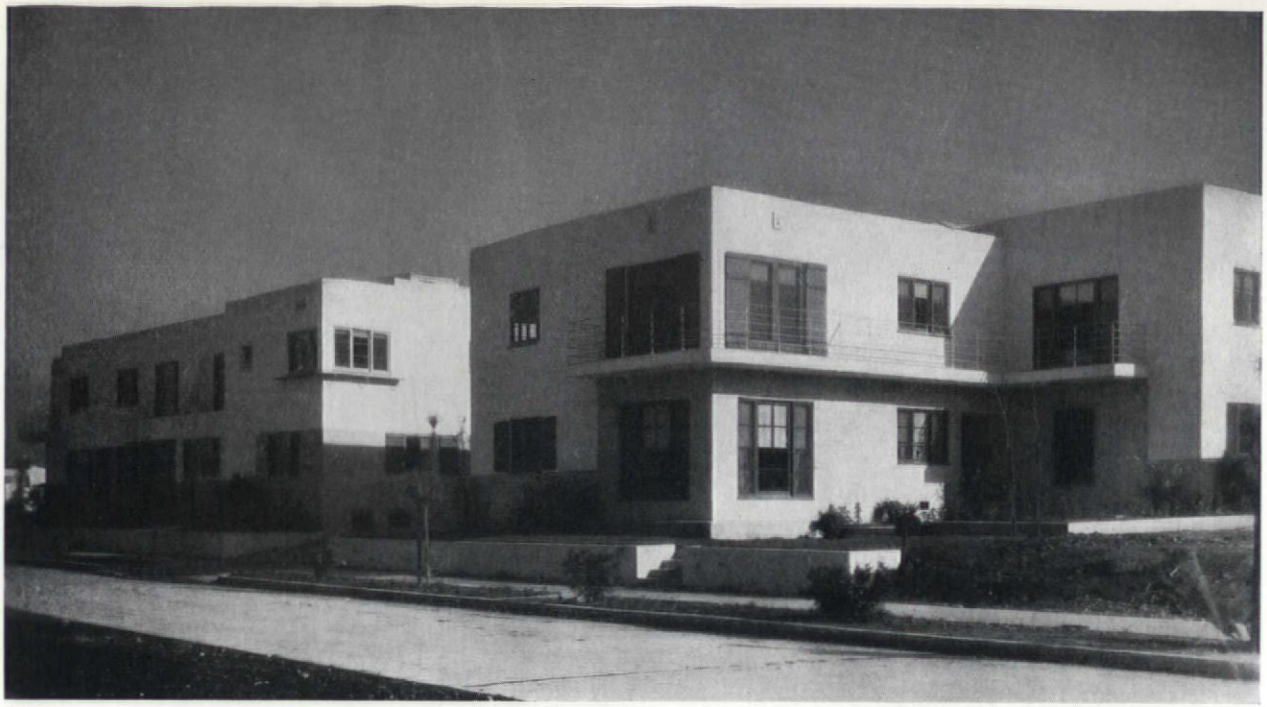
The project has been awarded the 1931 apartment house medal of the New York Chapter of the American Institute of Architects.

GRAND STREET APARTMENTS, NEW YORK CITY
SPRINGSTEEN AND GOLDHAMMER, ARCHITECTS

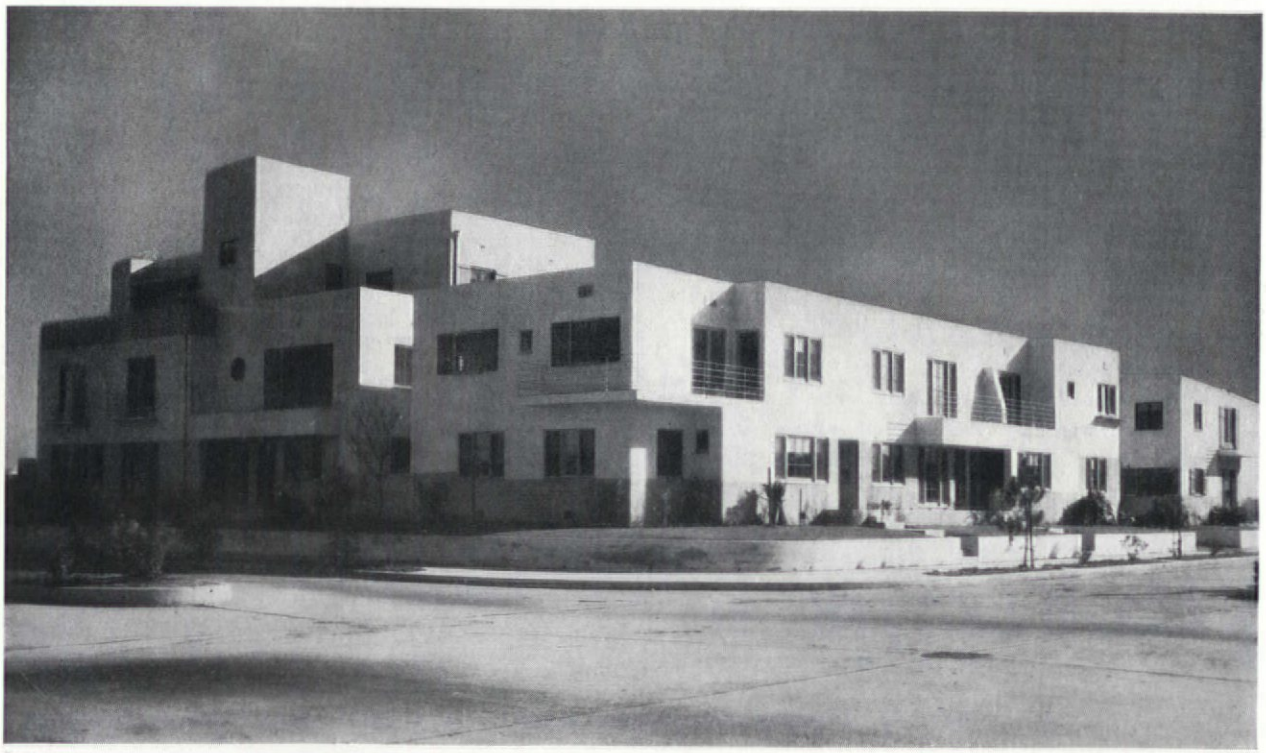
Berne

AUDUBON APARTMENTS, LOS ANGELES

FRANZ HERDING, CITY PLANNING ARCHITECT
GEORGE J. ADAMS, ARCHITECT



Berne



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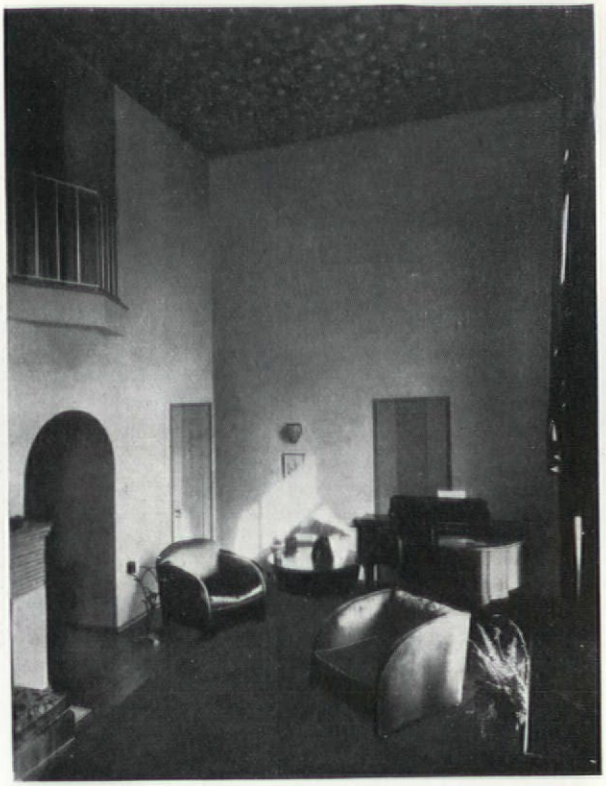
BAXTER APARTMENTS, LOS ANGELES

FRANZ HERDING, CITY PLANNING ARCHITECT
GEORGE J. ADAMS, ARCHITECT



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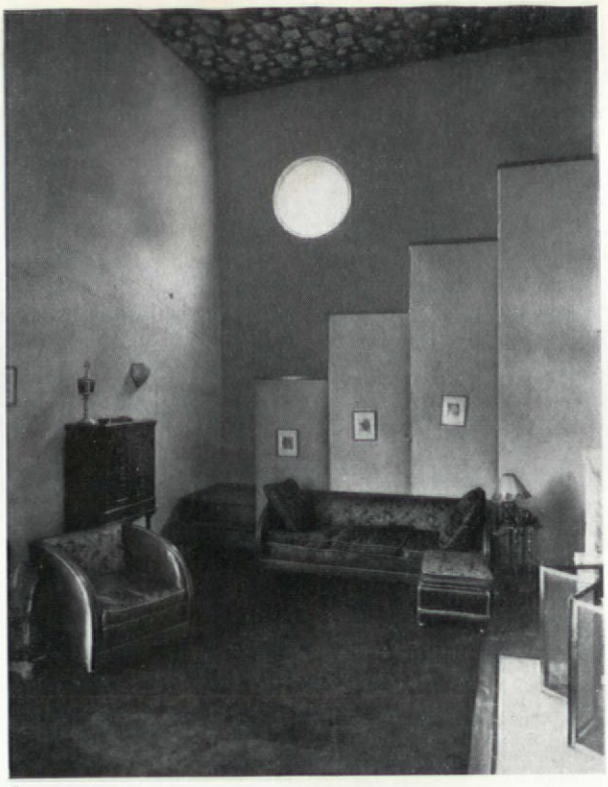


Berne

APARTMENT INTERIORS
FRANZ HERDING, CITY PLANNING ARCHITECT
GEORGE J. ADAMS, ARCHITECT

AUDUBON APARTMENTS (See plan on page 260)

Project: 12 unfurnished apartments flats with 12 garages on an inside lot 100′ by 110′.

Planning features: Each tenant has direct entrance to the street and garden. This provision entirely eliminated "back" and "side" apartments and their corresponding lower rental values. Public halls were reduced to a minimum. A minimum layout of a living room with wall bed, dining alcove, kitchen, bedroom, bath, and the necessary closets, was adopted. In southern California this is the most popular size for unfurnished apartments.

Construction: The building is nonfireproof, frame construction with cement plaster on the exterior.

Color scheme: The exterior plaster has a cement color coat of white with a touch of blue-green. The roofs are part clay tile and part composition. The exterior woodwork is a dark blue-green and the ironwork is dull silver. The entrance doors are in various bright colors, with colored decorations and silver studs.

Total cost, including architects' fee: $35,000.

Cost per cubic foot: approximately 24c.

BAXTER APARTMENTS (See plan on back of frontispiece)

Project: A group of three 6-unit unfurnished apartment flat buildings with necessary garages located on the southeast corner of Stocker Avenue and Degnan Boulevard. It was necessary to separate the buildings and to arrange the garages so that they could be sold independently.

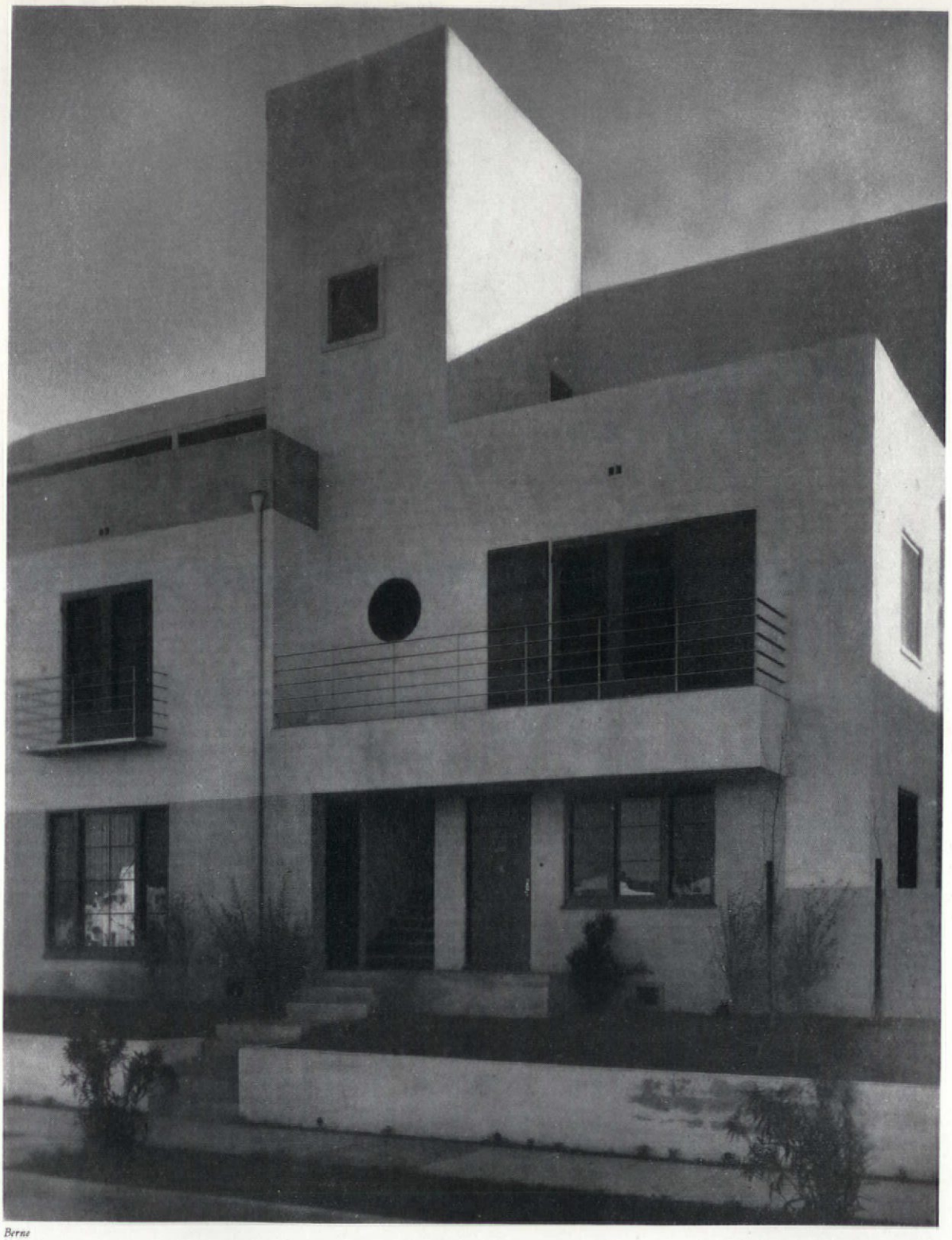
Planning features: Similar to Audubon Apartments.

Construction: Same as for the Audubon Apartments.

Color scheme: Various portions of the exterior plastered walls are combed horizontally and then colored a darker shade. The outside walls of each building are set off by three slightly different light colors. The windows in each building are also painted differently, in cold green, mauve, and yellow. All shutters painted a heavy green. The ironwork is silver.

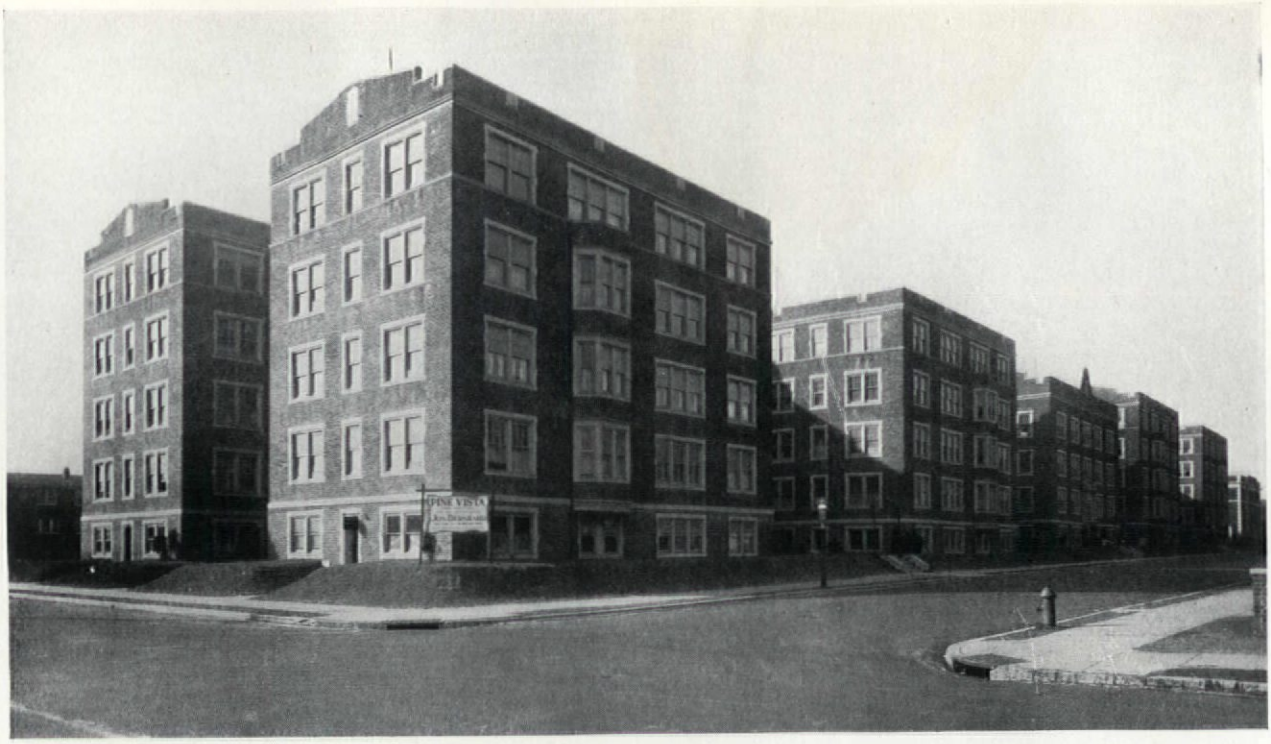
Total cost, including architects' fee: $46,000.

Cost per cubic foot: approximately 22c.

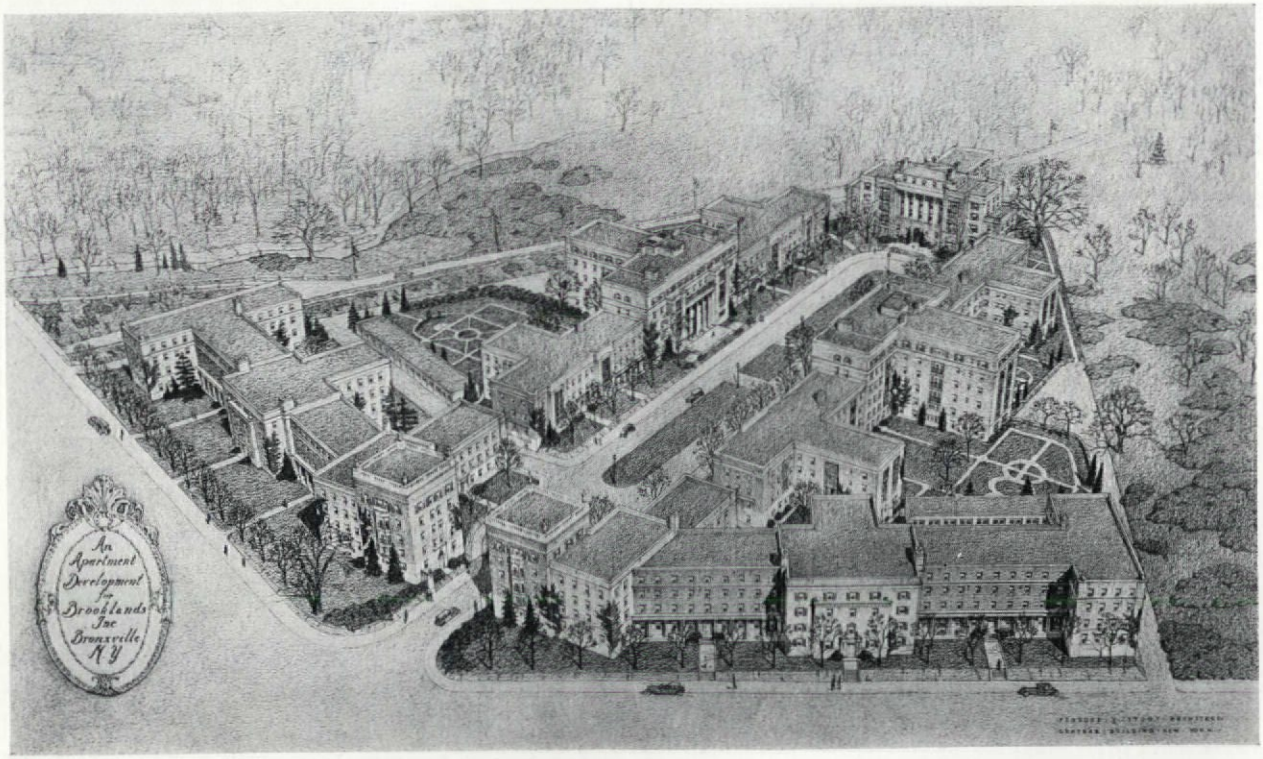


Berne

BAXTER APARTMENTS, LOS ANGELES
FRANZ HERDING, CITY PLANNING ARCHITECT
GEORGE J. ADAMS, ARCHITECT



PINE STREET APARTMENTS, PHILADELPHIA
CLARENCE E. WUNDER, ARCHITECT

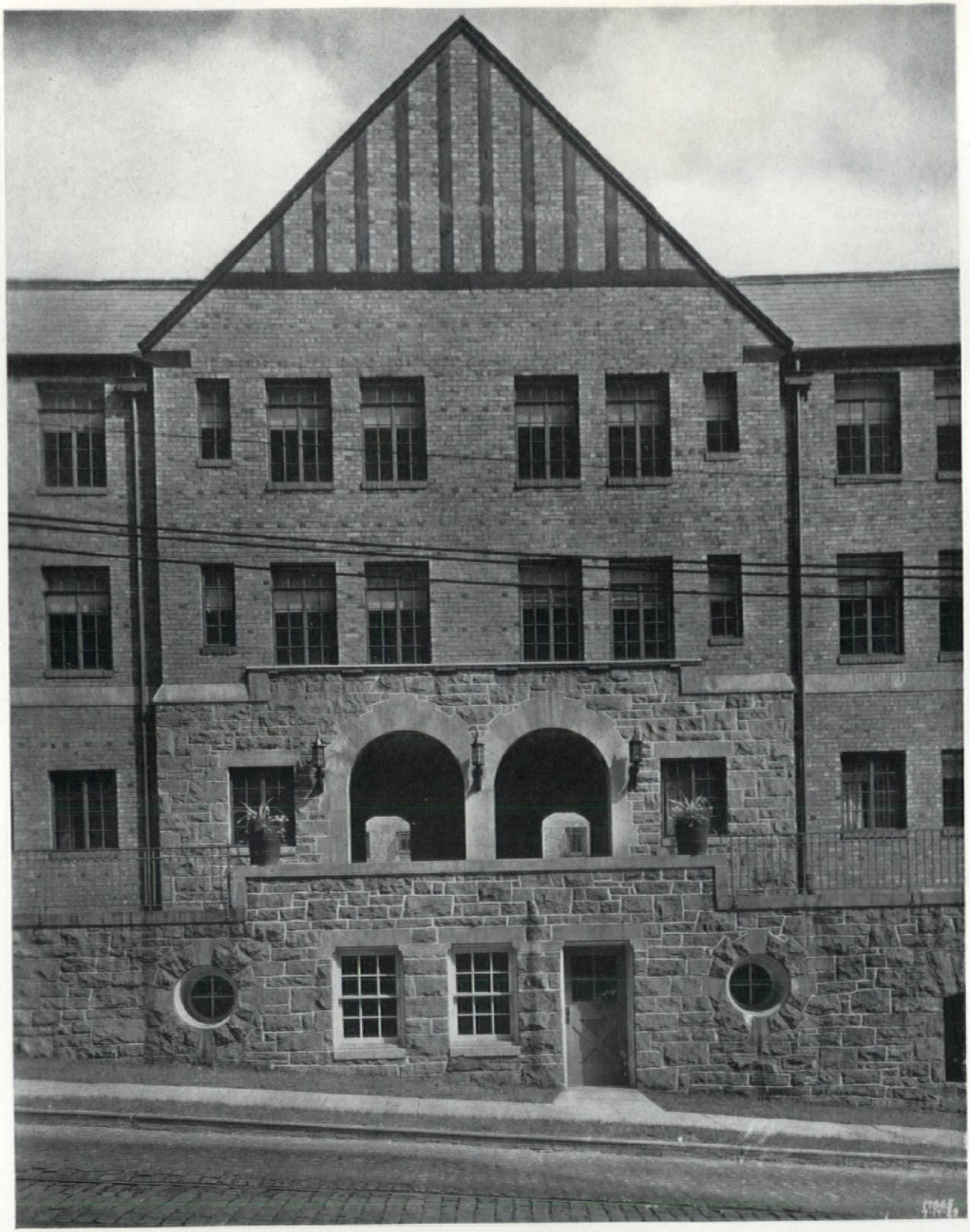


Dreyer

APARTMENT DEVELOPMENT, BRONXVILLE, N. Y.
PENROSE V. STOUT, ARCHITECT

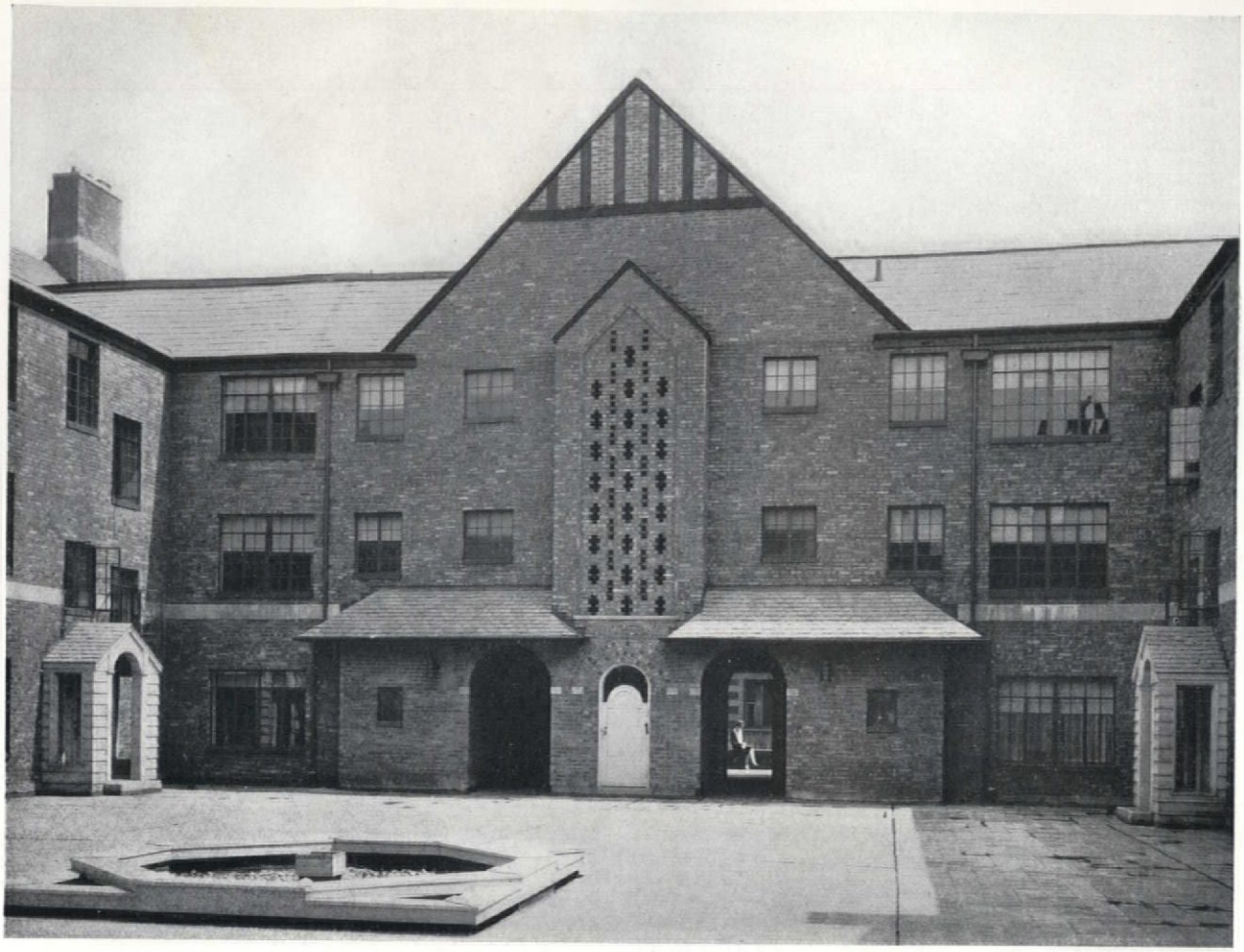
ELIZABETH MANOR, UPPER DARBY, PA.
CLARENCE E. WUNDER, ARCHITECT

KINGSWAY APARTMENTS, HADDONFIELD, N. J.
CLARENCE E. WUNDER, ARCHITECT



Trinity Court Studio

PENNSYLVANIA APARTMENTS, PITTSBURGH
D. A. CRONE, ARCHITECT



PENNSYLVANIA APARTMENTS, PITTSBURGH
D. A. CRONE, ARCHITECT

Layout: Units with direct sunlight. Complete home accommodations. All outside rooms. Direct connection to garage under the court.

Site: Fronts on three streets. Grade difference on diagonal corners about 17'.

Rentals: Prices range from $100 to $600 a month.

Exterior walls: Common brick, hollow tile backups.

Exterior colors: Brick, dark red; mortar, tan; steel sash, green; entrance, white enamel.

Roof: Slate.

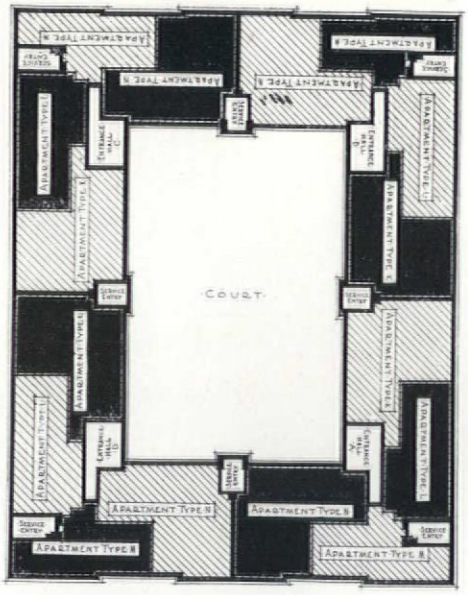
Floors: Concrete slabs, steel joist, wood sleepers, plain cut oak finished floors.

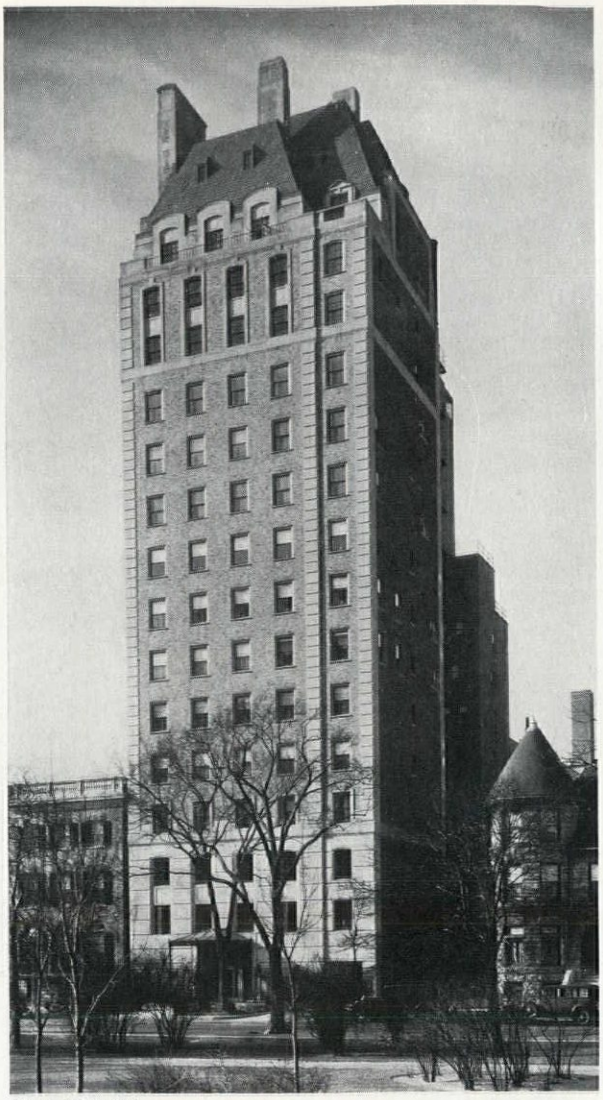
Interior walls: Steel studs, sheet rock, sand finish plaster, painted a very light tan with carefully proportioned amount of violet mixed in.

Stairhall walls: Concrete block with special surface composed of cement, mica and a few green marble chips. Joints lined off with 1/2" projection, 3/4" wide, white cement. Floors and stair treads of white terrazzo. Stair rails of simple iron, round wood handrail, enameled white and green, high gloss.

Building cost (excluding land): $510,000.

Cost per cubic foot: 63c, including 40-car garage under the court.





Chicago Architectural Photographing Co.

1530 N. STATE PARKWAY
COOPERATIVE APARTMENTS, CHICAGO
GRANGER AND BOLLENBACHER, ARCHITECTS

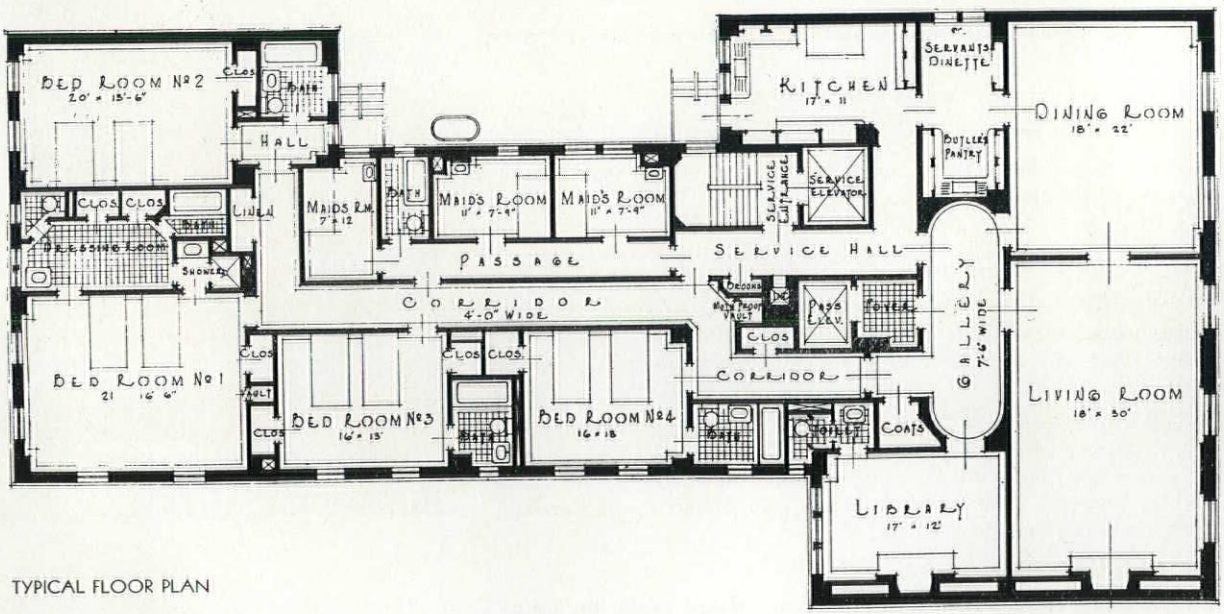
Construction: Reinforced concrete, with curtain walls of face brick and Indiana limestone.

Exterior colors: Pink face brick, limestone trim and Belgian black marble entrance.

Site: Inside lot 55′ by 150′.

Total cost of the building: $750,000.

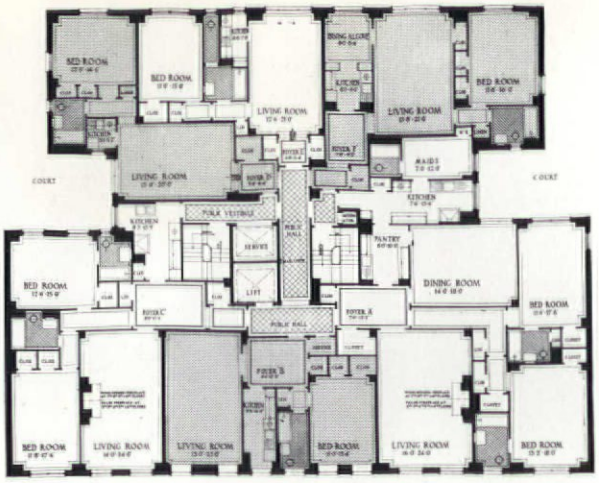
Cost per cubic foot: 92c.



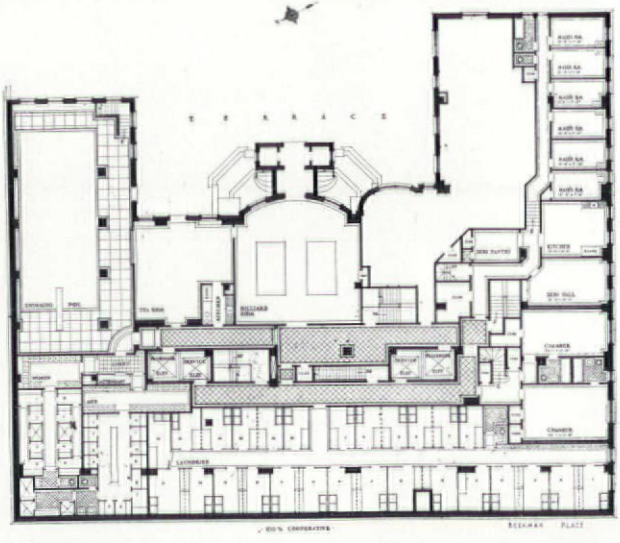
TYPICAL FLOOR PLAN

1530 N. STATE PARKWAY COOPERATIVE APARTMENTS, CHICAGO
GRANGER AND BOLLENBACHER, ARCHITECTS

Guild-Warnick

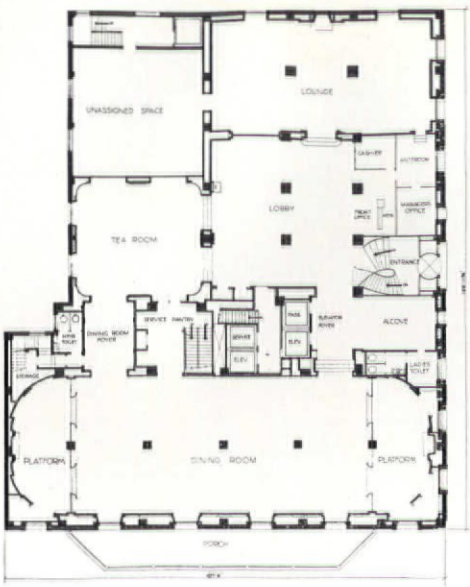


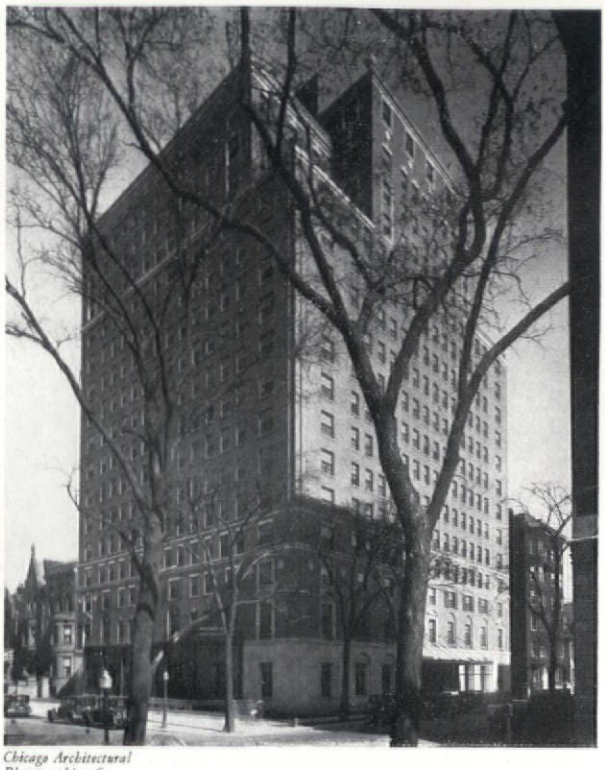
12 EAST 88TH STREET
NEW YORK CITY
ROSARIO CANDELA, ARCHITECT



1 BEEKMAN PLACE
NEW YORK CITY
SLOAN & ROBERTSON, ARCHITECTS
CORBETT, HARRISON & MACMURRAY
CONSULTING ARCHITECTS

AMBASSADOR EAST HOTEL
CHICAGO
ROBERT S. DeGOLYER AND COMPANY
ARCHITECTS





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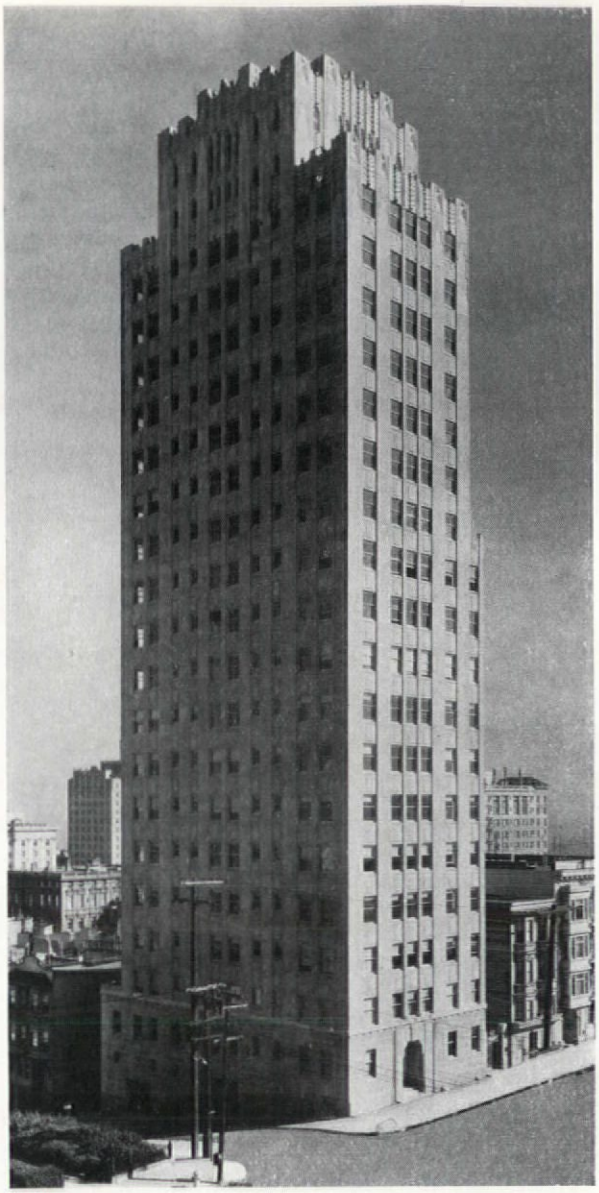
Nyholm and Lincoln

WINTHROP HALL, BRONXVILLE, NEW YORK
PENROSE V. STOUT, ARCHITECT



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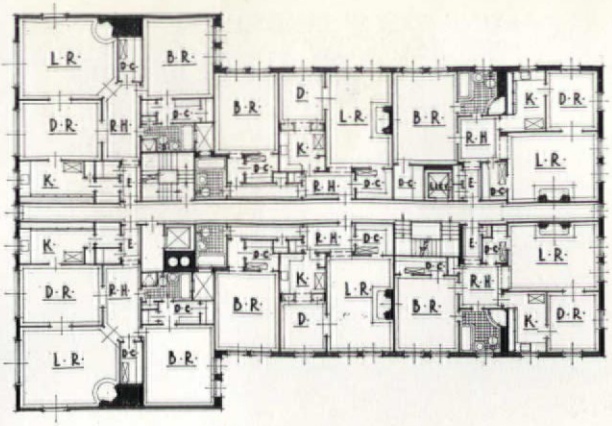
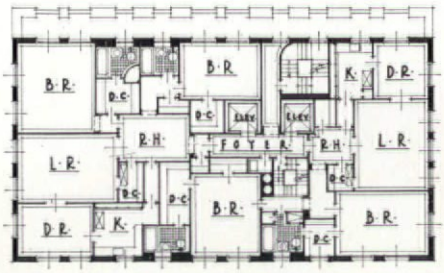


TYPICAL FLOOR PLAN



11TH TO 17TH FLOORS INCLUSIVE

CLAY-JONES APARTMENTS
SAN FRANCISCO
ALBERT H. LARSEN, ARCHITECT

Total number of apartments: 47.

Total number of rooms per apartment: 4 rooms, 5 rooms.

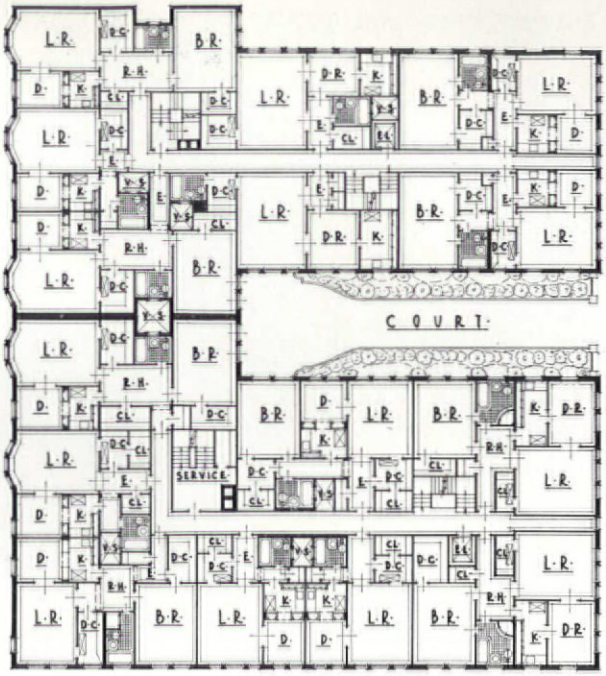
Construction: Steel frame; concrete floor slabs; wood double-hung windows; wood trim.

Heating: Steam.

Plumbing: Separate showers.

Total cost: $585,000.

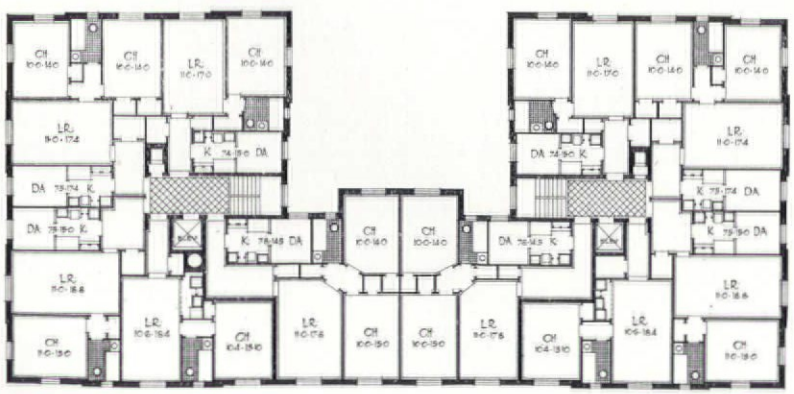
Cost per cubic foot: 60c.



EDDY-OCTAVIA APARTMENTS
SAN FRANCISCO
ALBERT H. LARSEN, ARCHITECT

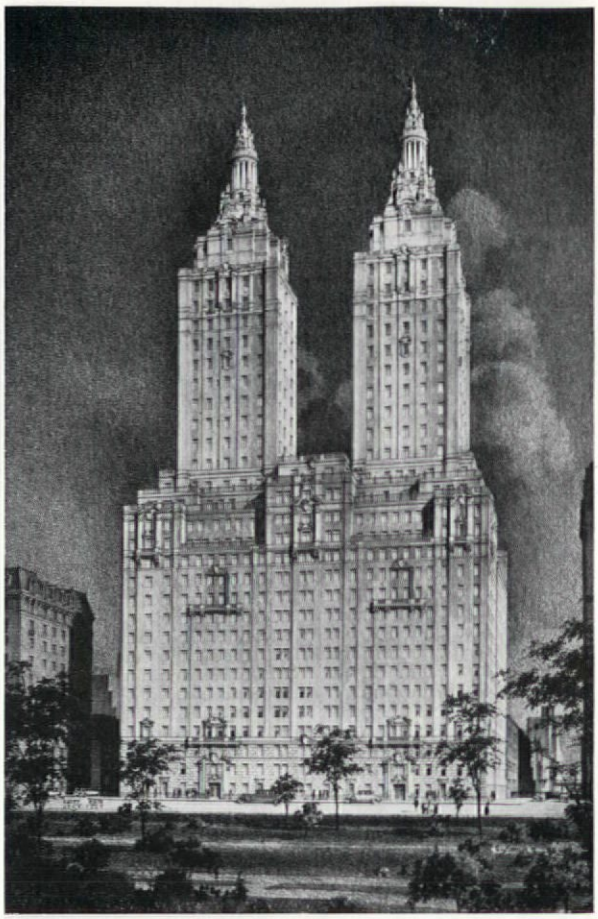
Project: Comprises two separate buildings.
Total number of apartments: 48 (No. 1); 42 (No. 2).
Total number of apartments per floor: 8 and 7.
Construction: Steel frame; floors, wood joists; wood double-hung windows, wood trim.
Heating: Steam.
Plumbing: Showers over tub.
Total cost: $250,000 (No. 1); $265,000 (No. 2).
Cost per cubic foot: 38c (No. 1); 38c (No. 2).

Dreyer



EIGHT 6-STORY ELEVATOR APARTMENT HOUSES
COMMONWEALTH, RANDALL, ROSEDALE AND LACOMBE AVENUES, BOROUGH OF BRONX, NEW YORK CITY

SPRINGSTEEN & GOLDHAMMER
ARCHITECTS



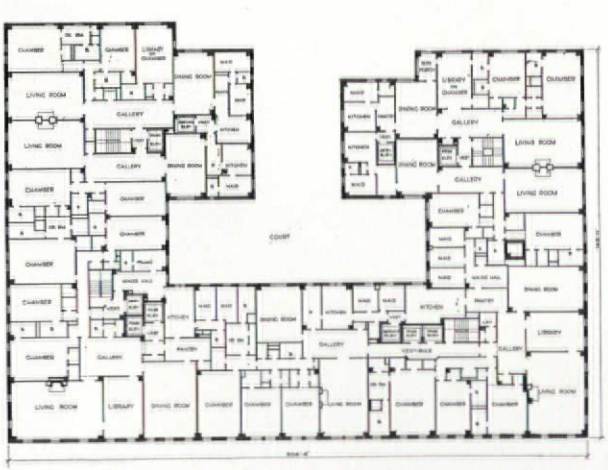
Wurts Bros.

SAN REMO TOWERS, NEW YORK CITY

Wurts Bros.

15 WEST 81st STREET, NEW YORK CITY

EMERY ROTH, ARCHITECT



Chicago Architectural Photographing Co.

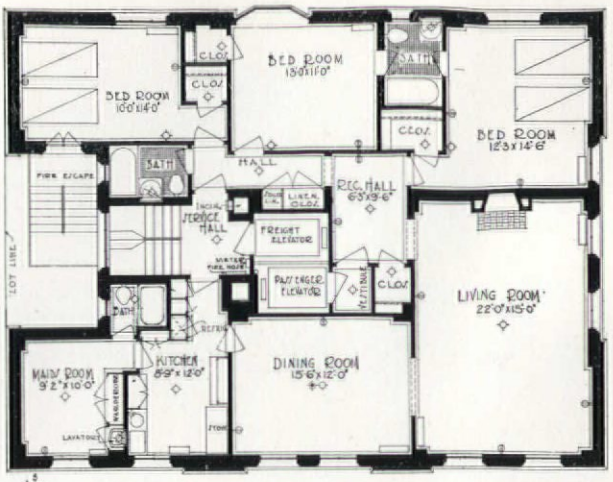
1301 ASTOR STREET
CHICAGO
GEORGE MAHER, ARCHITECT

Chicago Architectural Photographing Co.

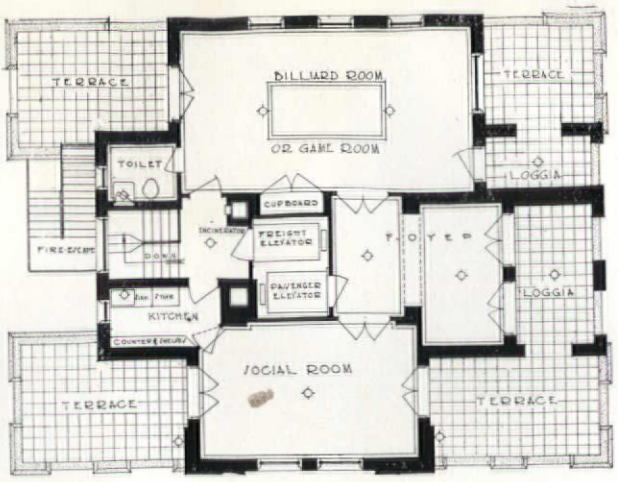
1321 EAST 56TH STREET
CHICAGO
HENRY K. HOLSMAN, ARCHITECT

"While plainly accepting the necessity for crowding each foot of valuable land to the limit, the form of individual design in New York does express, however, an expectation that the adjacent gaps are soon to be filled in with equally imposing units. Not so the typical Chicago high-class apartment, . . . its rigid bulk rises in full confidence that it is destined to remain permanently the only important edifice in its chosen block or district. We might well wish this could be the case. . . ."

Henry Wright



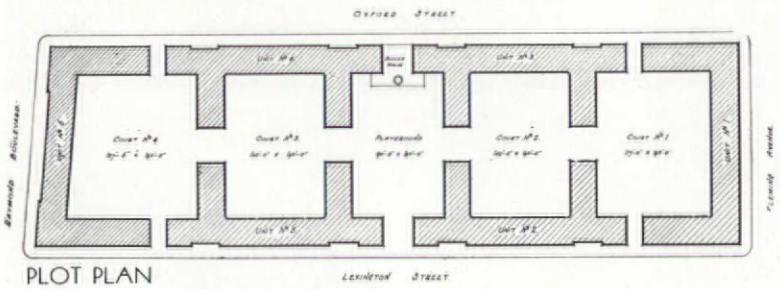
TYPICAL FLOOR PLAN



ROOF GARDEN PLAN

1321 EAST 56TH STREET, CHICAGO
HENRY K. HOLSMAN, ARCHITECT

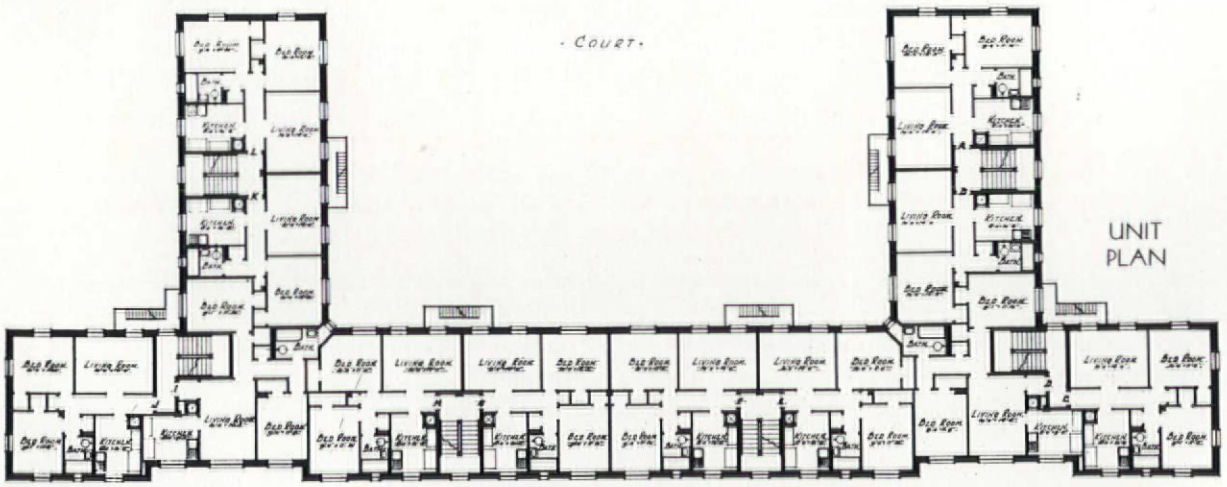
Special problems: 50′ by 50′ lot, building laws requiring 10-yard lot line court sufficient to comply with building law as to ground coverage.
Type of renters: Cooperative owners.
Construction: Reinforced concrete; brick and tile curtain walls; face brick and stone trimmings on all sides.
Roof: Asphalt membrane, covered with cement concrete.
Floors: Linoleum on concrete in kitchens, cork tile in other rooms.
Birch finish marble window sills.
Exterior color: Purple brown brick at the base, changing gradually to reddish buff at the top.
Total cost: $173,500.
Cost per cubic foot: 62c.



PLOT PLAN

CHELLIS AUSTIN APARTMENTS
NEWARK, N. J.
PRUDENTIAL INSURANCE COMPANY OF AMERICA

EDMUND C. STOUT, ARCHITECT
VOORHEES, GMELIN & WALKER
CONSULTING ARCHITECTS



UNIT PLAN

McCANLES APARTMENT BUILDING, KANSAS CITY, MISSOURI
WALTER A. BESECKE, ARCHITECT

Planning features: The building has no basement, the front of the first floor being used for lobby, clerk's office and manager's apartment, the rear for boiler room, locker room, laundry and mechanical equipment. All living rooms designed for corner locations.
Number of apartments: 65 units, all double apartments except one single and one studio on each floor.
Construction: Reinforced concrete frame, with 3" concrete slab on hollow joists; ceilings, suspended metal lath; partitions, 3" gypsum block, enclosure walls, brick with tile or haydite backing.
Color scheme: Exterior wall, variegated shades of mat-face brick running from brown to dark red; terra cotta trim, two tones of cream.
Building cost: $350,000.
Cost per cubic foot; 60c.

Chicago Architectural Photographing Co.

1100 NORTH LA SALLE STREET, CHICAGO
LOUIS GUENZEL, ARCHITECT

Wurts Bros.

One apartment of 12 rooms to each floor. Total cost of $550,000. Cost per cubic foot about 73 cents.

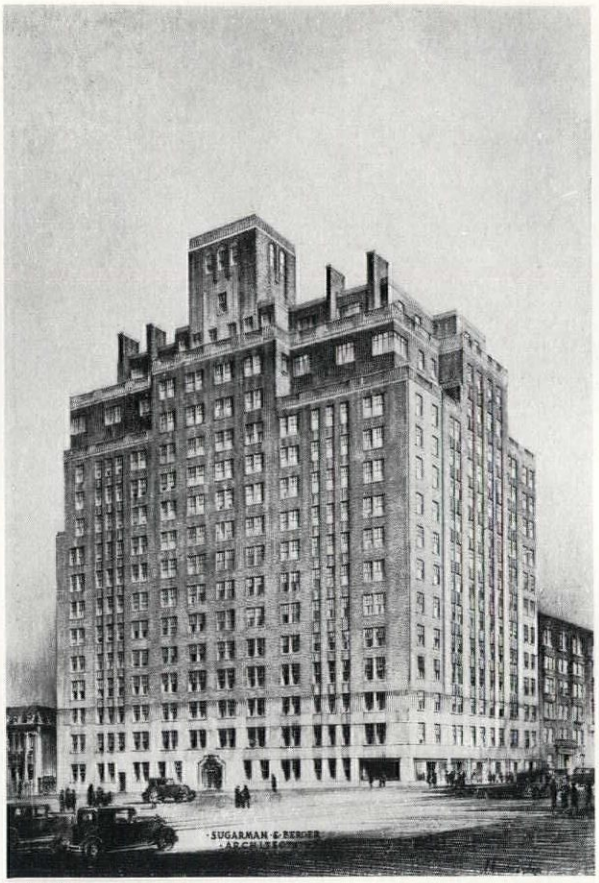
21 EAST 79TH STREET, NEW YORK CITY
VAN WART AND WEIN, ARCHITECTS

Wurts Bros.

4 EAST 72ND STREET, NEW YORK CITY
HOFFMAN AND GOLDSTONE, ARCHITECTS

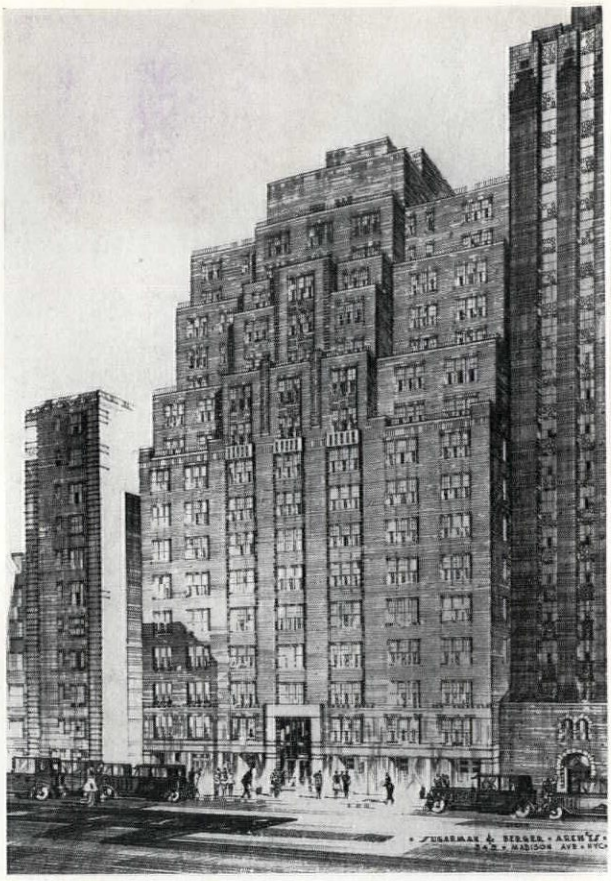
Gottscho

LIVING ROOM OF APARTMENT OF MAURICE S. BENJAMIN
211 CENTRAL PARK WEST, NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT



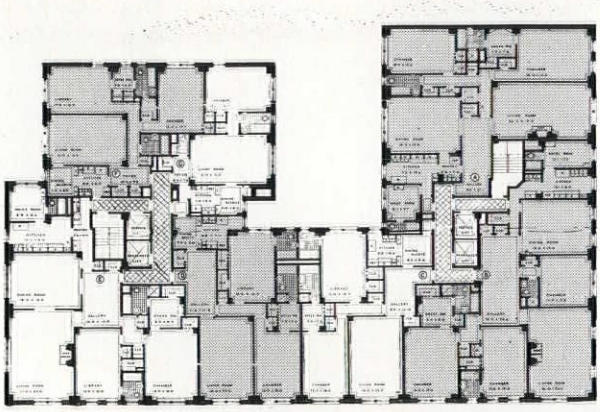
Rothschild

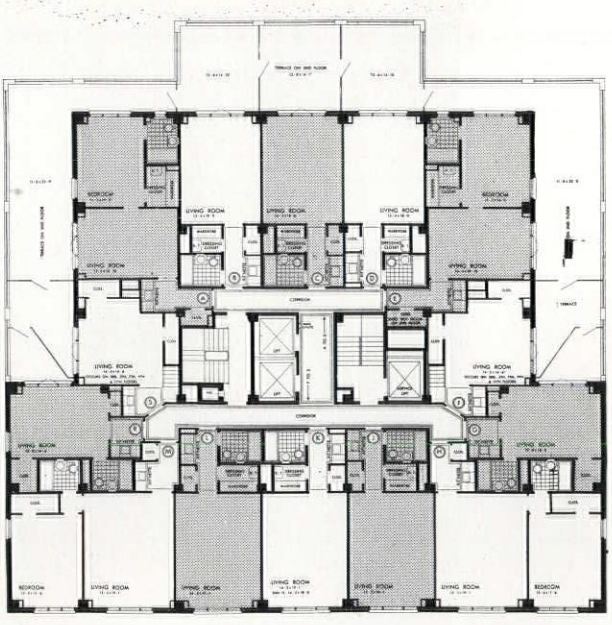
40 EAST 88TH STREET
NEW YORK CITY



MAJOR LANE APARTMENT HOTEL
NEW YORK CITY

SUGARMAN AND BERGER, ARCHITECTS

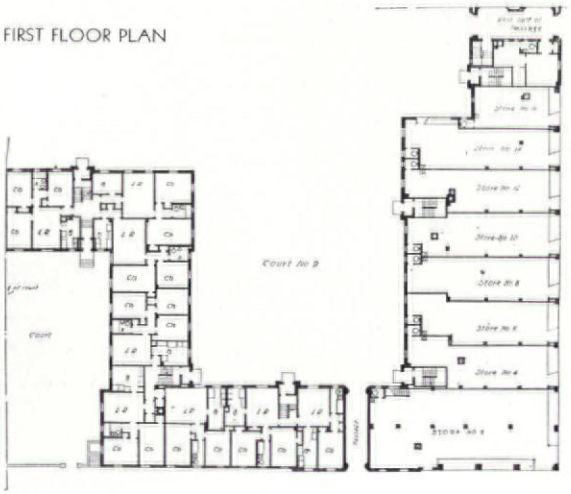


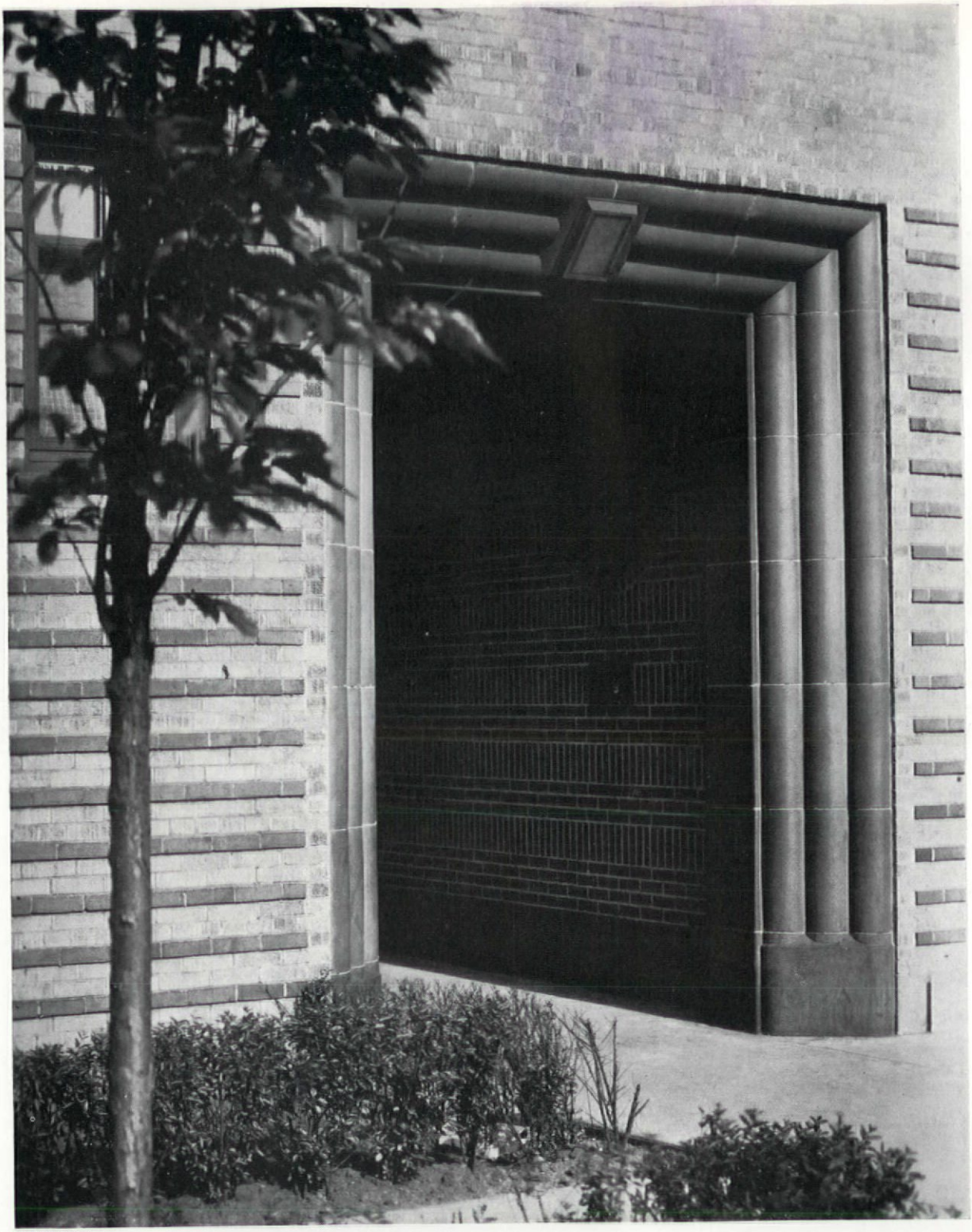


Hedrich-Blessing

MICHIGAN BOULEVARD GARDENS, CHICAGO
E. H. KLABER AND E. A. GRUNSFELD, JR., ARCHITECTS

FIRST FLOOR PLAN





Hedrich-Blessing

MICHIGAN BOULEVARD GARDENS, CHICAGO
E. H. KLABER AND E. A. GRUNSFELD, JR., ARCHITECTS

Hedrich-Blessing

MICHIGAN BOULEVARD GARDENS, CHICAGO
E. H. KLABER AND E. A. GRUNSFELD, JR., ARCHITECTS

Hedrich-Blessing

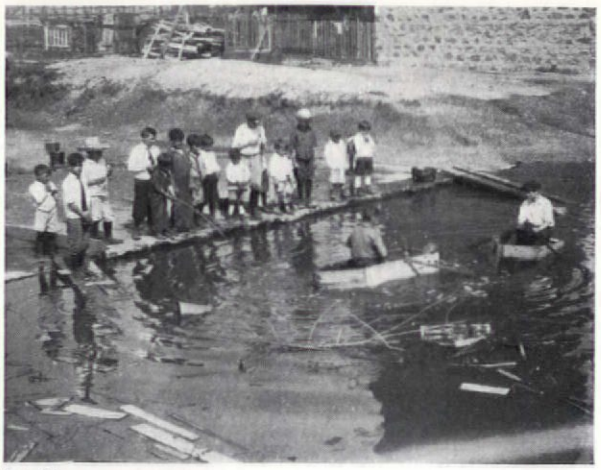
"The present tendency is to limit interior court activities to the youngest children . . . Only sand piles, swings and other simple equipment need then be provided."

MICHIGAN BOULEVARD GARDENS, CHICAGO
E. H. KLABER AND E. A. GRUNSFELD, JR., ARCHITECTS

PLAY AREAS FOR APARTMENT HOUSES

By C. THEODORE LARSON

Why should children have to create their own playgrounds, unsupervised? . . . Proper provision of play and recreation areas for children and adults increases the rentability of apartments.



Browning

Along with the apartment house, the playground has become significant for its new social and economic importance in the life of the community. The virtues of regulated play are recognized: children are kept off the streets, to the great relief of both mothers and motorists, and with the guidance of play supervisors, the proper spirit of comradeship and mutual co-operation can be developed in the youngsters. At the same time, centralized care of children during the day permits many women, who find it necessary to augment the family income under the new economic division of labor, to go into industries and business.

Adult social activities also must be considered as an integral part of the community recreational program. The problem of what to do with enforced leisure stands out most strikingly in present conditions of business depression and unemployment.* For the future the need of providing adequate facilities for recreation will be of even greater importance as machines continue to supplant hand labor. Clearly, here is a challenge to the foresighted planner of communities and dwellings.

Some efforts in this direction are already apparent. Several large apartment developments in New York, Newark and Chicago have provided play space in the interior courts. Other block interior playgrounds have been attempted successfully in Detroit, Duluth, Evansville and Kansas City. Roofs likewise are being utilized for recreation. A new apartment house at 1 Beekman Place, New York City, designed by Sloan and Robertson, architects, with Corbett, Harrison and MacMurray as consulting architects, has squash courts, recreational parlors, billiard room, swimming pool, gymnasium, and community accommodations on the three basement floors. It should be noted that this apartment house has rented well.

*Cincinnati has established a municipal playground next to a state-city employment bureau. Here, in good weather, the unemployed men play baseball, horseshoes and volley ball; in bad weather they enjoy checkers, cards and target board.

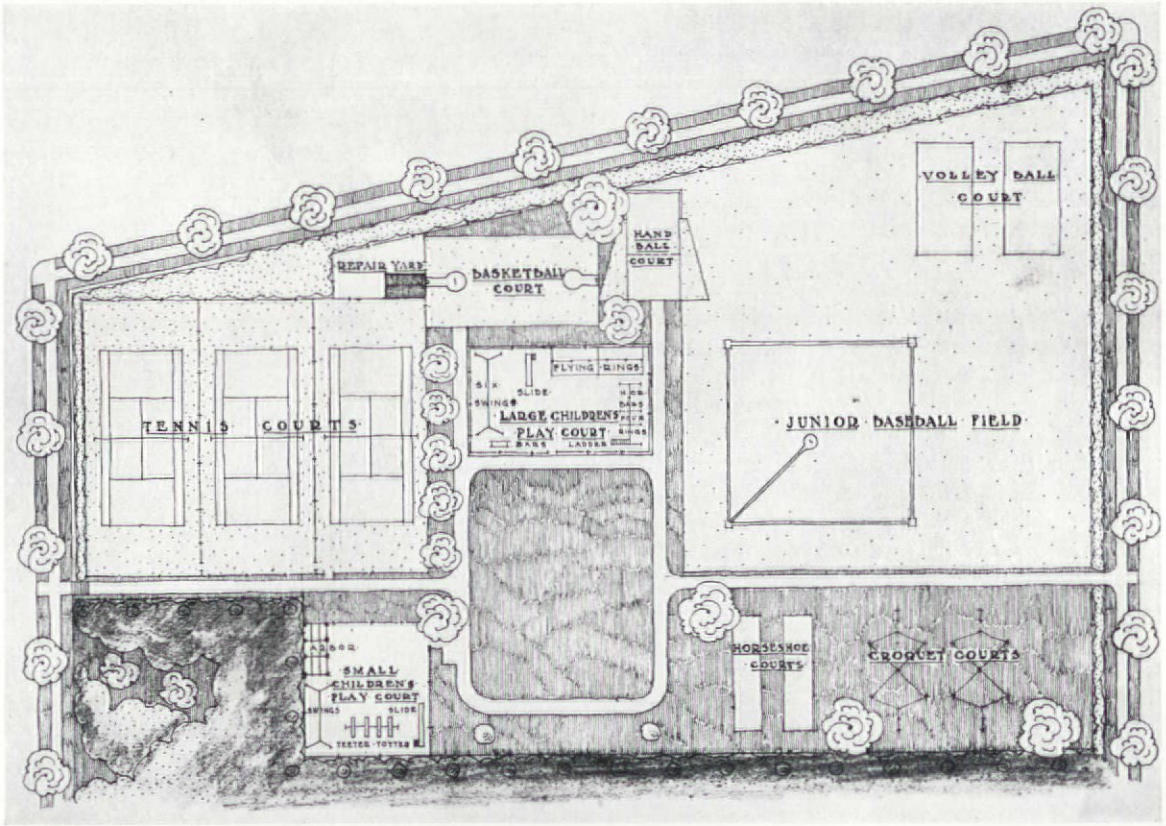
TRENDS IN PLAY AREAS

Interior courts: Many planners have experimented with the scheme of a common space in the middle of a block development. The enclosure of apartments obviously eliminates the hazard of automobiles, but if the block depth is shallow, there will be complaints of the noise of the children as well as a sacrifice of necessary sunlight. Unless the development is sufficiently large to support a play leader, the children will not have a fair chance for play and the proper maintenance will be lacking. With a large square block having the interior space used for a common garden or park—a principle effectively applied in English town planning—these objections are largely overcome.

The present tendency is to limit interior court activities to the youngest children and to send the older boys and girls to a neighborhood playfield. Only sand piles, swings and other simple equipment need then be provided.

At Sunnyside Gardens in New York an interior court plan was designed with the central space as a basketball and cinder playfield for the older children, a tennis court at one side for adults, and a sand pile and wading pool at the other for the toddlers. As Clarence S. Stein, the architect, points out, the arrangement was almost 100% wrong. The older children were too noisy, the single tennis court was insufficient and expensive to maintain by itself, and mothers were afraid the youngsters would drown in the pool. A playfield now serves the community and the interior courts of the new buildings are developed as gardens with a sand pile and sheltering pergola reserved for the smallest children.

Nurseries and interior playrooms: Indoor play space, for use when the weather is bad, is provided in the larger apartment developments as an adjunct to the court playgrounds. In the Chellis Austin Apartments in Newark, designed by Edmund C. Stout, architect and engineer, there will be a center court playground, surrounded by a 10′ wire guard



Brown Brothers

Older children and adults should have a neighborhood playfield, separate from the apartments, but readily accessible.

SUNNYSIDE GARDENS, LONG ISLAND, NEW YORK
CITY HOUSING CORPORATION
HENRY WRIGHT AND CLARENCE S. STEIN, ARCHITECTS

and containing slides, rings and the like; adjacent, in a wing, will be an indoor playroom and in another wing a day nursery where tenants who work can leave their children in the care of a competent person at a nominal cost. A similar arrangement is seen in the Paul Lawrence Dunbar Apartments, designed by Andrew J. Thomas, architect. The playground, which can be seen from most of the garden windows, measures 48′ by 111′, and is equipped with seesaws, swings, sand piles and other apparatus; an indoor game room, toilets for the children and a day nursery with a trained nurse in attendance are also provided. In the Marshall Field apartments in Chicago, also designed by Mr. Thomas, the ten apartment buildings, accommodating 648 families, are grouped round a large interior garden, 800′ long, with a playground measuring 40′ by 145′ in the center and separated from the rest of the garden by an iron railing; adjoining the playground is an interior playroom, 30′ by 60′, fully equipped to serve as a miniature gymnasium.*

Community playfields: Recreation specialists and city planners generally agree that, where possible, older children and adults should have a neighborhood playfield, separate from the apartments but readily accessible. The apartment play spaces are then reserved for the smaller children and the less active adults.

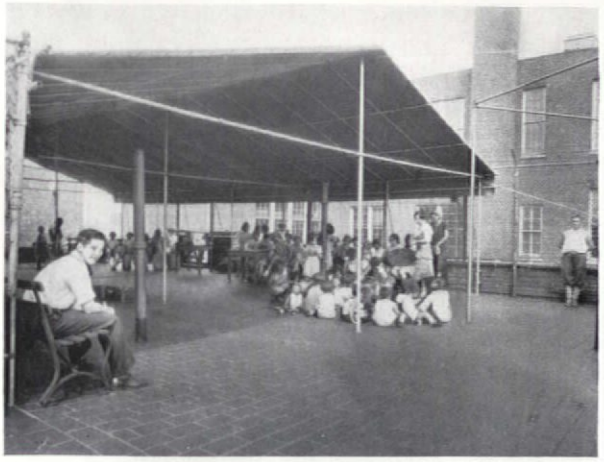
The logical place for the neighborhood playground is the *school*, theoretically located to be most accessible to the children served by it. Many economies can be effected by arranging the facilities of the school building to serve both the school and the playground, thus avoiding duplication of equipment. Play leaders are more easily provided and the grounds can be kept open after school hours and on Saturdays and holidays.

At the Sunnyside development the community playfield is maintained through fees paid by those using the grounds. This is a charge additional to the taxes paid by the citizens—an important consideration in determining the advisability of a neighborhood playfield when not provided by the local civic administration. Whether city-controlled or community-supported, it is imperative that provision be made in the financial set-up for maintenance charges.

Roof playgrounds: Of increasing importance is the use of apartment roofs for recreation. On the old type of roof this was not practical—the clutter of tanks, clothes-drying space, dumbwaiter shafts, plumbing pipes, chimneys and lightwells left no unbroken play space for the children. The roof had to be strengthened, adding to the construction costs, and there was always the objection that the small boys would inevitably climb over the coping or any railing that might be put up, and if any accident resulted the owner would be faced with large claims for damages.

Today roof playgrounds are most numerous on school buildings where they are used as outdoor gymnasiums for physical training classes. According to Lee F. Hanmer, writing in "Regional Survey of New York and Its Environs," Vol. V, page 108, the practical usefulness of the roof playground outside of school hours is limited by construction and administration. Patronage is small when one has to climb to the roof top, and school authorities are reluctant to keep the buildings open at night.

Comparatively few apartment developments have yet utilized the roofs for recreation. Of these, the garden apartments built by the Amalgamated Housing Corporation at East Grand and Sheriff Streets, New York City, and designed by Springsteen



Edro Photo Service

This roof has been developed for adult recreation as well as children's play. Movies, dances, volley ball, checkers and dominoes are popular, and the cool summer breezes can be enjoyed.

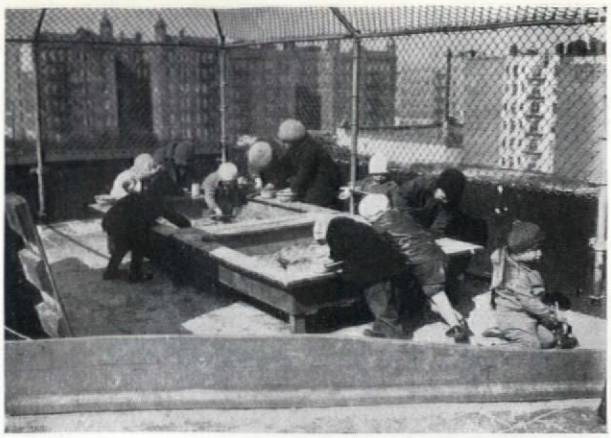
LAVANSBURG FOUNDATION APARTMENTS
GOERCK STREET, NEW YORK CITY

*A very useful analysis of nursery and kindergarten requirements, with a checking list of building standards, equipment and play apparatus, was published in the March 1930 Apartment House number of THE RECORD ("Apartment Design to Meet Family Needs," by Robert L. Davison, pages 270-274).

and Goldhammer, architects, will have a part of the roof area developed as a roof garden, not for games or sports but for people to sit and enjoy the view, the sunshine and the fresh air. Automatic elevators will enable mothers to take baby carriages out on the roof. The roof of the Lavansburg Foundation Apartments, 124-142 Goerck Street, New York City, has also been developed for adult recreation as well as children's play: movies, dances, volley ball, checkers and dominoes are popular, and the cool summer breezes can be enjoyed.

Recreation authorities agree that the apartment roof should be used chiefly for social purposes rather than for sports. The present trend seems to indicate this development as most practical and desirable. Lawrence Veiller, editor of *Housing*, suggests that the roof be equipped with glass enclosures so that the ultraviolet rays can be utilized for sun bathing the year round. Benches should be provided for this purpose and outer walls safeguarded with railings so designed that children will be discouraged from playing on them or attempting to scale them. Mr. Veiller suggests also that provision be made for band concerts to be given by the tenants preferably.

Difficulties of design and administration should not prevent continued study of the play and recreation possibilities of roofs. When used for sports, the roofs should not only be properly surfaced but should be absolutely soundproof. A wire cage completely inclosing the play space will prevent balls and other objects being thrown off into the streets.



Outer walls should be safeguarded with railings so designed that children will be discouraged from attempting to scale them.

ROOF, SUNNYSIDE APARTMENTS, NEW YORK CITY HOUSING CORPORATION

Van Anda

This interior court playground measures 48′ by 111′. It is equipped with seesaws, swings, sand piles and other apparatus. An indoor game room, washrooms for the children and a day nursery with a trained nurse in attendance are also provided.

PAUL LAWRENCE DUNBAR APARTMENTS, NEW YORK CITY
ANDREW J. THOMAS, ARCHITECT

PLANNING

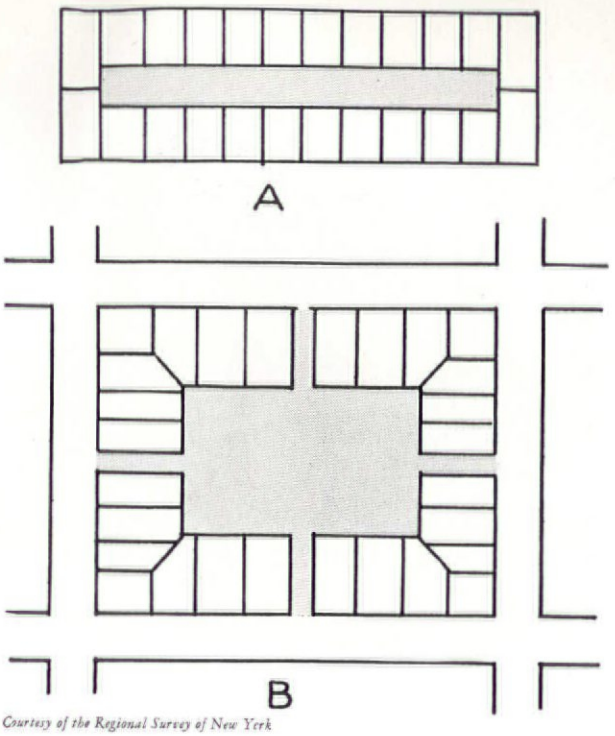
In the layout of play spaces certain fundamental considerations must be kept in mind:

Streets: Traffic barriers should be avoided. The use of many a playground has been seriously curtailed because of a heavy barrage of street traffic between the playfield and the homes of the children. With the development of arterial highways for fast automobile traffic certain areas are naturally segregated; playfields should serve only those living within the segregated area so that there will be no necessity to cross the traffic barrier. Playgrounds located in apartment courts open on one side to a street have been found hazardous because of the likelihood of children dashing blindly out after stray balls.

Sunlight and air: Except in a few instances, as in the case of an outdoor rink for ice skating where shade will keep the ice from thawing too rapidly, the play space should have as much sunlight as can be secured. Ample "lung-space" should be allotted. For *playgrounds*, limited to use by children under 15 years of age, the New York Regional Plan studies recommend 100 square feet for each child at play. For *playfields*, given over to such games as baseball, hockey, cricket, football, volley ball and tennis, about 1000 square feet for each player is considered satisfactory.

Noise: Many tenants object to the noise made in the excitement of a game. Provision must of course be made to overcome this objection. A minimum separation of 60 feet between the play space and the nearest apartment is recommended. Accessibility is desirable, but if the apartment development is large enough and ample space is available, a playfield for older boys and girls and adults may be located at a greater distance away. The playground for children of the preschool age, who are comparatively quiet, should be kept nearer the apartments. Suitable planting of shrubbery and trees will do much to absorb sounds. Adults and older children will walk or ride a longer distance, up to a maximum effective radius of a half mile, to reach a neighborhood playfield. Smaller children are unable to go far unassisted; furthermore, for the peace of mind of their mothers, they should be given space where they can be easily observed from apartment windows, unless nursery accommodations are provided.

Paths: Most playgrounds and playfields require footpaths for players to reach certain areas without crossing spaces in active use. When space is valuable, paths should be as few and direct as possible; they can serve to advantage as natural divisions for the different game areas. They are usually of concrete or gravel. Main paths, near the entrance, should be wide, with the secondary paths narrow.



Courtesy of the Regional Survey of New York

Where the block depth is shallow (plan A) the interior court will lack sufficient sunlight and openness. Noise will also be found objectionable by tenants. With a large square block (plan B) having the interior space as a common park—a principle applied in English town planning—these objections are largely overcome.

Fences: The children's playground should be fenced for reasons of safety. Property and passers-by are protected against batted balls; outside distractions, as well as trespassing on neighboring property, are eliminated. If the fence is set inside the property line a few feet, plantings will make a good sound screen; a second and lower fence may sometimes be necessary to protect the plantings. The National Recreation Association suggests either No. 6 or No. 9 gauge wire with a 2″ mesh and a height of 5′ to 8′, depending on protection required.

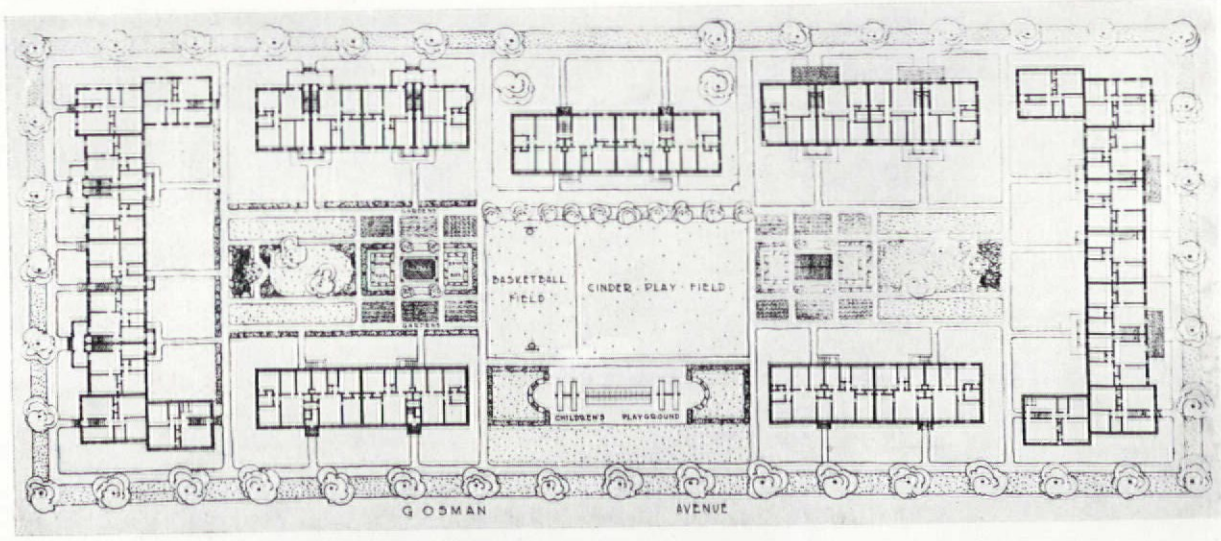
Lighting: Night illumination offers increased use of play areas, especially for those persons whose working hours allow little recreation during the day. Position of lights should be determined early so that conduits for wires may be laid before surfacing is completed.

Drainage and surfacing: Level areas are best for play purposes. Terracing will secure maximum use of an uneven topography. A gradual slope of 6″ to a hundred feet is satisfactory for the removal of water. Playgrounds should be porous for drainage, firm when wet and dustless when dry. Turf is best for small children's play but not always possible to maintain on a small, much-used area.

Torpedo sand or gravel makes a good top dressing for a clay or heavy loam soil. According to the National Recreation Association, cinders should be avoided. Concrete and brick are too hard on the children's feet.

Maintenance: Playgrounds *must* be kept in order—and this entails expense. Unless provision is made in the financial set-up of the building project to support a play leader and to maintain the necessary upkeep of grounds and equipment, the playground may develop into a nuisance, with the older boys bullying the younger children and with the whole area looking littered and disorderly. Maintenance must be considered in determining the schedule of rentals—nor should it be overlooked that well-planned and well-kept play and recreation space will add much to the rentability of the apartments.

Brown Brothers



Experience has shown that for interior court playgrounds older children are too noisy. A single tennis court (shown at the far end of this court) is insufficient and expensive to maintain by itself. The sand box and sheltering pergola, however, are desirable for the youngsters whose mothers wish to keep them under surveillance.

SUNNYSIDE APARTMENTS, LONG ISLAND, NEW YORK
HENRY WRIGHT AND CLARENCE S. STEIN, ARCHITECTS

FACILITIES AND EQUIPMENT*

Wading pool: Despite occasional objections on the score of children becoming unnecessarily wet, the wading pool is extremely popular in its appeal, especially when it can be utilized also as a place to sail small boats. (Consider the hundreds of children—and adults—who find the pools in Central Park in New York, or the Luxembourg gardens in Paris, so attractive for sailing their toy yachts.) A concrete walk several feet wide surrounding the pool is very desirable; the walk should slope toward drains placed so that the area around pool will not become muddy. A curb 4″ to 6″ wide will prevent water draining into pool. Children should enter at shallow end through a foot bath provided with continuously flowing water to prevent dirt being tracked into the pool. Provide benches for mothers, and one or more sand courts with a trellis, on south side of pool. Frequently the wading pool is placed alongside the swimming pool.†

Dimensions: Size of wading pool depends on number of children served. Pools are usually circular or rectangular (the cheapest to build) in shape, although an irregular naturalistic contour offers interesting possibilities for play. Depth varies from a few inches at shallow end to 12″ or 18″ at deepest point. Some pools are as deep as 24″ or 30″ in order that the children may swim, but these require constant supervision.

Construction: A concrete pool should be laid on a base of broken stone or cinders so that ground or surface water will be drained away without danger of frost cracking the concrete. Thickness of walls and bottom varies from 4″ to 8″. Seal expansion joints with asphalt or tar. Water can be brought into pool through a pipe or fountain in the center or through a grating in the floor. Provide overflow opposite inlet, arranged so that prevailing wind is with the currents toward the overflow, thus draining off dust and oily surface water. Place outlet drain, covered with grating, at deepest point. Provide sand traps or catch basins so that pipes will not become clogged. A colored cement finish for pool and surrounding walk is desirable in order to reduce the glare of the sun. Floor of pool, curb and walks should be slightly roughened to prevent slipping. Side walls should be as smooth as possible, with corners and intersections rounded to facilitate cleaning.

Sand box: Provide two boxes, if possible, or partition a big box into two sections so that one, with sand kept moist, can be used for modeling and the other, with the sand warm and dry, can be reserved for the very small children for general play. Shade from trees, building, trellis or awning is desirable, but the sun should reach the box for several hours each day. Benches for mothers should be provided.

The sand box offers splendid opportunities for creative modeling as well as general play.

SUNNYSIDE APARTMENTS, NEW YORK
HENRY WRIGHT AND C. S. STEIN, ARCHITECTS

Dimensions: Variable, from 6′ x 10′ to 12′ x 20′, with 3′ to 5′ clearance on each side for play. Walls 12″ to 15″ in height, with a shelf 10″ or 12″ wide round top or at least two sides to be used as a seat and also for modeling.

Construction: Concrete or wood, preferably zinc-lined. If soil is porous, no special base is needed; remove grass before putting in sand. Heavy clay surface or concrete bottom requires provision for drainage. Cover of wire mesh on a lightweight frame, or a sectional lid with bored holes to admit air, should be provided to guard the box when not in use.

Maintenance: 12″ to 15″ of sand, changed twice a season or oftener. Rake thoroughly for exposure to sun and air each day.

Slide: Stairway not too steep and limited in width to accommodate only one child at a time. Handrail and a platform at top. Chute curved at bottom to break force of landing. Place in shade, since the chute, especially if of steel, will become too hot for comfortable play if exposed to the sun.

Dimensions: 16′ slide, with starting platform 8′ above ground, for older children; 12′ and 8′ slides for younger children. Approximate use space requirements, 12′ x 30′ for the large slide; 20′ x 45′ for a gang slide; 20′ x 30′ for a racer slide.

Construction: Chute of steel or rock maple. Sand, shavings or sawdust may be placed in a box 5′ x 2′ sunk into the ground at base of chute. Slide supports are usually set in concrete although portable slides may be used.

*For the following recommendations and suggestions we wish to acknowledge indebtedness to the National Recreation Association. This association has prepared a book, *Play Areas, Their Design and Equipment* (published by A. S. Barnes and Co., New York) containing much valuable data.

†For analysis of the design and construction of swimming pools, consult The Architectural Record, January 1929, pages 67-87.

The slide is popular with children of all ages. Extensive use demands best construction and materials.

SUNNYSIDE PLAYFIELD, NEW YORK

Van Anda

Toilet facilities, conveniently located, are desirable.

BAYONNE HOUSING CORPORATION, NEW JERSEY
ANDREW J. THOMAS, ARCHITECT

Swings: To prevent accidents caused usually by children running into the swings, place them at one side of playground parallel to fence or building, or provide a low railing or iron pipe fence in front. Sometimes a white line 2″ or 3″ wide is marked on the ground as a safety precaution.

Dimensions: For small children swings should not be more than 8′ or 10′ high, with 3½′ to 4′ width for each swing. For older children the swings can be 11′ high, with 4½′ to 5′ width for each swing. A set of 3 swings will require 30′ x 35′ approximate use space.

Construction: A frame of galvanized steel pipe is most serviceable. Use 3″ pipe for horizontals and 2″ pipe, set in concrete, for uprights. Frames support 2 to 8 swings, but uprights are required between every 2 or 3 swings. The pipe collar supporting rope or chain should have a viselike grip since it bears strain of swinging. Hemp rope is more practical than manila, which must be shrunk. Steel chain with big links is generally used. A lightweight swing board, edged with rubber bumpers (a piece of old garden hose can be screwed on edges), minimizes liability of accidents.

Seesaw: The longer the board and the lower the standard, the safer the equipment. The teeter is not highly favored by playground workers, although generally provided.

Dimensions: Boards 12′ to 14′ long; support about 2′ high.

Construction: Provide safety bumpers to keep lower end 6″ to 8″ off ground. Round ends of boards. Handles are desirable. Use only vertical grain stock free from splinters, and paint frequently.

Giant stride: This apparatus consists of an upright pole with a pivot head from which several ropes or chains with ladder handles are fastened. Place in a corner to minimize danger to other children at play. A circle 30′ in diameter marked on ground will serve as a safety precaution.

Dimensions: Upright 14′ to 18′ in height.

Construction: Pole usually is made of 4″ galvanized steel pipe set about 4′ in concrete. A 1″ crosspipe at bottom will prevent upright from turning in the concrete. Four to eight ropes, or chains (which last longer), are attached to the rotating head. The ladder handles may be of wood, steel or aluminum; 2 or 3 knots at 18″ intervals near free end of rope may be used instead of ladders, if desired. Fill pipe with sand or concrete to deaden sound of chain ladders striking the uprights.

Horizontal ladder: *Dimensions:* Usually 7′ 6″ high. For children under 10, maximum height should be 7′.

Construction: Keep ground underneath well spaded, or excavated and filled with sand or shavings.

Traveling rings: This apparatus provides healthful exercise but accommodates comparatively few children and occupies much space. A circular traveling ring arrangement which conserves space has been recently put on the market.

Dimensions and construction: Rings are attached to chains suspended at 6′ intervals from a horizontal pipe 12′ to 14′ high. The height of rings is regulated so that the child can jump up and seize them; a low platform may be provided at one end for this purpose.

Jungle-gym: This climbing structure is a patented combination of horizontal ladders, horizontal bars, climbing bars, climbing poles and vertical ladders. The apparatus is highly endorsed by many recreation authorities. It can be used by many children at a time.

Dimensions: Manufactured in several sizes and combinations.

Horizontal bar: This piece of equipment occupies little space and is particularly attractive to boys.

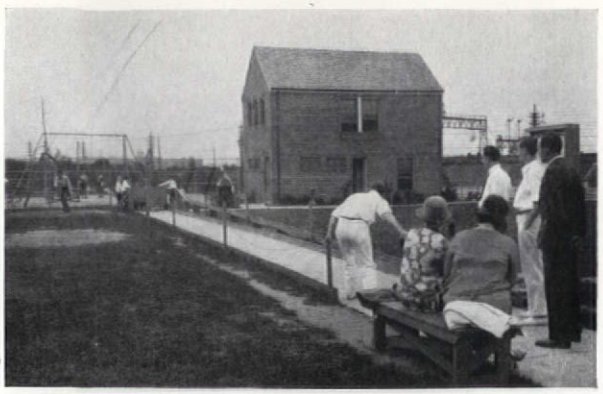
Dimensions: Bar should be 5′ to 7′ 6″ high. Approxmate use space of 12′ x 20′.

Construction: If adjustable, bar should be kept in place and prevented from turning by a bolt or pin. Ground under bar should be kept clean and soft.

SPACE REQUIREMENTS FOR ORGANIZED GAMES FOR CHILDREN*

Name	*Dimensions of Play Areas*	*Use Dimensions*	*Space Required (Sq. Ft.)*	*Number of Players*
Baseball	75′ diamond	250′x250′	62,500	18
Basketball	35′x60′	50′x75′	3,750	10–12
Clock Golf	Circle 20′ to 24′ in diameter	30′ circle	706	any number (4–8)
Croquet	30′60′	30′x60′	1,800	any number (4–8)
Field Hockey	150′x270′	150′x330′	49,500	22
Football	160′x360′	180′x420′	75,600	22
Hand Ball	20′x30′	35′x40′	1,400	2 or 4
Horseshoe Pitching	stakes 30′ apar	10′x40′	400	2 or 4
Paddle Tennis	18′x39′	26′x57′	1,482	2 or 4
Playground Ball	45′ diamond	125′x125′	15,625	20
	35′ diamond	100′x100′	10,000	
Soccer	150′x300′	150′x360′	54,000	22
Tennis	27′x78′ (single) 36′x78′ (double)	50′x120′	6,000	2 or 4
Tether Tennis	circle 6′ in diam.	20′x20′	400	2
Volley Ball	25′x50′	40′x60′	2,400	12–16

*These tables of space requirements have been prepared by the National Recreation Association.



Bowling and pitching horseshoes provide exercise which is not too strenuous.

SUNNYSIDE PLAYFIELD, NEW YORK

SPACE REQUIREMENTS FOR ORGANIZED GAMES FOR ADULTS

Name	*Dimensions of Play Areas*	*Use Dimensions*	*Space Required (Sq. Ft.)*	*Number of Players*
Baseball	90′ diamond	300′x325′ (or more)	97,500	18
Basketball	50′x94′ (max.) 35′x60′ (min.)	60′x100′ (average)	6,000	10
Basketball (Women's)	45′x90′	50′x100′	5,000	12–18
Boccie	18′x62′	30′x70′	2,100	2–4
Bowling Green*	14′x110′ (1 alley)	120′x120′ (for 8 alleys)	14,400	32–64
Clock Golf	circle 20′–24′ in diameter	30′ circle	706	any number (4–8)
Cricket	wickets 66′ apart	420′ circle	138,545	22
Croquet	30′x60′	30′x60′	1,800	any number (4–8)
Field Hockey	150′x270′ (min.) 180′x300′ (max.)	180′x330′ (average)	59,400	22
Football	160′x360′	180′x420′	75,600	22
Hand Ball	20′x34′	40′x50′	2,000	2 or 4
Hand Tennis	16′x40′	25′x50′	1,250	2 or 4
Horseshoe Pitching	stakes 40′ apart	10′x50′	500	2 or 4
Lacrosse	210′x450′ (min.) 255′x540′ (max.)	250′x500′ (average)	125,000	24
Paddle Tennis	18′x39′	30′x60′	1,800	2 or 4
Playground Ball	35′ or 45′ diam.	150′x150′ (or more)	22,500	20
Polo	600′x960′	600′x960′	576,000	8
Quoits	stakes 54′ apart	25′x80′	2,000	2 or 4
Roque	30′x60′	30′x60′	1,800	4
Shuffleboard	10′x40′ to 50′	15′x50′ (or longer)	750	2 or 4
Soccer	150′x300′ (min.) 300′x390′ (max.)	210′x360′ (average)	75,600	22
Tennis	27′x78′ (single) 36′x78′ (double)	60′x120′	7,200	2 4
Tether Tennis	circle 6′ in diam.	20′x20′	400	2
Volley Ball	30′x60′	50′x80′	4,000	12–16

*Most bowling greens in public recreation areas are 120′x120′ which provide 8 alleys. The amount of space required for a single alley would be 20′x120′.

LIVING ROOM OF APARTMENT OF MAURICE S. BENJAMIN 211 CENTRAL PARK WEST, NEW YORK CITY.
ELY JACQUES KAHN, ARCHITECT.

Gottscho

HOW LARGE THE APARTMENT SUITE?

Some 61 apartment houses, all of which were opened for occupancy between 1924 and 1927, have been made the subject of a detailed analysis,* by H. P. Somerville, a New York real estate operator, from the point of view of the sizes of the various rooms.

The buildings were divided into two broad classes: those in which the apartments rented for $700 or less per room per year, and those which rented for more than $700. 33 of the buildings fell in the former class and 28 in the latter. Of the total apartments, 112 fell in the group of those renting for $700 per room or less, and 58 in the second group. Of the number of rooms covered by the study, 740 were in the group of lesser cost and 421 in the group of higher cost. The average height of the buildings in the lower-cost apartments was 12 stories and 13 stories in the higher-cost groups, the greatest height in the lower-cost group was 16 stories and 20 stories in the other group; the least height was 9 stories in the first group and 3 stories in the second group. The average rental in the lower-cost group was $577 per room; and $860 in the higher group. The highest rental was $690 in the lower-cost group and $2100 in the higher-cost group: while the lowest rental was $410 per room in the lower-cost group and $700 in the higher-cost one.

The following figures give in detail the area, the average size, the smallest size, and the largest size of each of the principal rooms in the apartment houses included in this study, including foyer, living room, dining room, kitchen, bedrooms, maid's rooms and bath rooms.

Foyer—Average	5.5′x10.4′	7.5′x15.4′
—Area	57.25 Sq. Ft.	115.5 Sq. Ft.
—Small	3.0′x4.0′	4.0′x6.0′
—Large	15.0′x16.0′	10.0′x40.0′
Living Room—Average	13.8′x20.7′	18.6′x23.8′
—Area	285 Sq. Ft.	443 Sq. Ft.
—Small	12′x14′	13′x17′
—Large	15.3′x34′	18′x29′
Dining Room—Average	13.4′x17.5′	14.5′x18.7
—Area	234 Sq. Ft.	271 Sq. Ft.
—Small	11′x14′	12′x12′
—Large	13′x25′	19.6′x22.6′
Kitchen—Average	7.6′x12.5′	9.2′x14.2′
—Area	95 Sq. Ft.	131 Sq. Ft.
—Small	5′x8′	4.9′x11.9′
—Large	14′x17′	11.8′x18.8′
Chamber—Average	12.2′x16′	12.9′x17.1′
—Area	195 Sq. Ft.	221 Sq. Ft.
—Small	9′x11′	10.4′x12.7′
—Large	14.9′x21′	16′x26′
Maid's Room—Average	7.1′x11.3′	7.2′x11.1′
—Area	80 Sq. Ft.	80 Sq. Ft.
—Small	5′x10.4′	6′x12′
—Large	8′x12.4′	9.9′x12.3′
Bath Room—Average	5.7′x7.9′	5.9′x8.8′
—Area	45 Sq. Ft.	52 Sq. Ft.
—Small	5′x6′	5′x7′
—Large	7′x11′	8′x13′

While this study concerned itself with high class apartment houses occupied by the higher income group, a similar study of room sizes in the lower income group would unquestionably prove profitable and might ultimately lead to a tendency toward standardization of room sizes in the buildings designed for that class in the community.

*Appearing in the March, 1930, issue of *Housing*, published by the National Housing Association.

DEVELOPING BUSINESS FOR THE ARCHITECT

To the Editor:

I was much interested in the details of the Beaux-Arts Apartments which Raymond Hood was instrumental in building and which you featured in "The Architectural Record." Would it be possible to obtain from you more information concerning this project, especially the financial setup?

In looking for new ways in which the architect might sell his services to the public, it has occurred to me that it is time for him to take the initiative and enter fields that so far he has been content to leave for others. The speculative small house as built by the contractor is badly planned and atrociously detailed. Cannot the architect, with dignity and without being unethical, head up an organization composed of tried subcontractors who, together with the architect, would contribute the total of the building. This group would assess against the work only their exact costs. The profit from sales would be divided on some equable basis, presumably upon the relative amount of work furnished at cost. Whole developments of small houses, themselves well designed with properly distributed community centers, can only be achieved when controlled by one capable mind. The architect is the only specialist who has this capability. Why should he not displace the speculative contractor to his as well as the neighborhood's everlasting credit?

Respectfully,

(Signed) Lamont H. Button, Architect
Pittsburgh

THE ARCHITECT HIS OWN CLIENT

Case: The Beaux-Arts Apartments, New York City Architects: Kenneth M. Murchison, and Raymond M. Hood, Godley and Fouilhoux, associated.

Many architects have been their own clients for various types and sizes of building but probably the largest venture is the recently completed Beaux-Arts Apartments, a project costing $5,250,000. This enterprise was accidental in its inception but has proved so satisfactory that the architects are now working on a similar project. Mr. Raymond Hood, while negotiating for the purchase of a site for the Beaux Arts Institute, New York, discovered that the adjoining property could be bought at a very reasonable figure, so he got together a group of friends to assemble a large plot and to build. He invited the group, consisting of ten architects, three decorators, two artists, a real estate firm, a firm of real estate attorneys and a firm of general building contractors, to meet at luncheon. It was decided that if the cloak and suit merchants could make money from the services of the architect and builder, the architect and others in the building industry could also make money by following their own advice. As a result of the luncheon, $150,000 was contributed by various individuals. The George A. Fuller Company agreed to match this sum and with this capital, plus the architectural fee contributed in services, a deal involving $5,250,000 was worked out.

The method of financing the enterprise is described* by John Reed Kilpatrick, vice-president of the George A. Fuller Co.:

"A careful budget was made of all of the various costs necessary to produce the completed structures, not arrived at by appraisals or by capitalizing estimated earnings, but by carefully calculating the actual costs of the various elements necessary to turn over complete income-producing buildings.

* "Financing Also Goes Modern," appearing in *Building Investment*, February, 1930.

"Seventy-five per cent of this amount was provided by an issue of six per cent cumulative preferred stock which was sold to the public through the National City Company, each share of preferred stock carrying with it a bonus of one share of common stock.

"The remaining twenty-five per cent of the funds required was provided by an issue of second preferred stock which was underwritten by the original syndicate, the builders and the architects. This issue of second preferred stock, subordinate only to the first preferred, carried the same rate of interest as the first preferred, but received three shares of common stock with each share of preferred. Sufficient shares of common stock were provided so that forty per cent of the issue went with the first preferred and forty per cent with the second preferred stock issues. The remaining twenty per cent went to the U. S. R. Management Corporation, a company organized jointly by the United States Realty & Improvement Company and the National City Company for their services in financing the operation and to provide continuity of management for the completed structures.

"This scheme of financing has many obvious advantages. The purchaser of the first preferred stock has the same security that the purchaser of a first mortgage bond has, with the single exception that he has not the right of foreclosure. He is assured, however, that the property cannot be 'milked'—for three quarters of the net earnings in any period *must* be applied to the redemption of the class of stock that he holds. In this particular operation (the Beaux-Arts Apartments), if the buildings are even less than fifty per cent rented, the entire first preferred dividend will be earned. On the other hand, if it is an outstanding success he shares substantially in the excess earnings through the common stock which he receives as a bonus with his original purchase of preferred stock.

"So much for the holder of the first preferred, and now let us consider the situation of the holder of the second preferred: While he furnishes only twenty-five per cent of the money required, he receives forty per cent of the common stock in the enterprise. Due to the fact that there is no mortgage ahead of his security, but only the first preferred, he cannot lose by foreclosure, nor is there any possibility of the second preferred stockholders being required to furnish money to meet any deficit in operation, since if the buildings are even less than twenty-five per cent rented, sufficient money would be provided thereby to fully meet taxes and operating expenses,—the only obligatory payments ahead of his security.

"If the buildings are successful, in a comparatively short space of time he receives back through the application of all earnings to the redemption of the first and second preferred stocks his entire investment and thereafter he receives a very substantial income through his common stock holdings, which he receives as a bonus."

If the architect is to enter the promotion field he should prepare financial data which not only include estimated cost and rentals, but allow ample leeway for financing and vacancy costs while the project is getting under way. Every promotion scheme is an individual problem and must be worked out in cooperation with someone who has had experience in local conditions. The financial data tables given by Keast and Randall in the April 1930 issue of THE ARHITECTURAL RECORD may prove valuable to any one preparing a financial statement for an office building. These tables give the customary discounts and financing costs for commercial enterprises which, of course, will have to be modified to suit local conditions.

CLOTHES CLOSETS

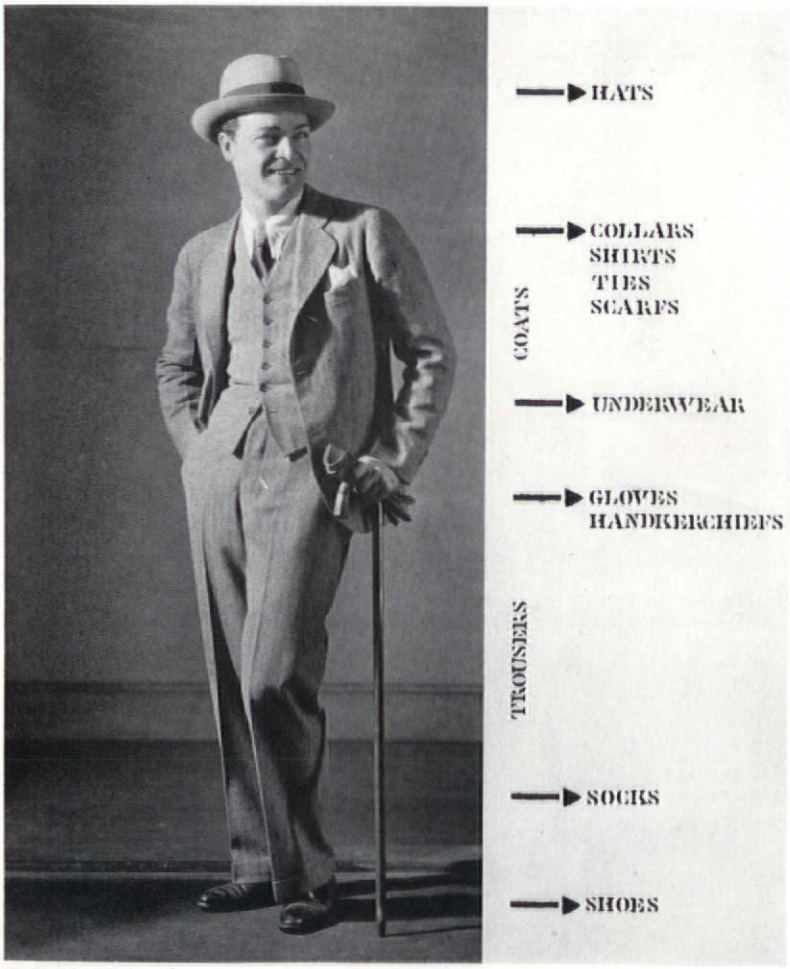
MAKE THEM CONVENIENT AND INCREASE THEIR CAPACITY

By A. LAWRENCE KOCHER and ALBERT FREY

Space for the storage of wearing apparel in the apartment or home can be adjusted to the variety of needs for clothes storage. That clothes closets, generally, are not more efficient may be due to failure on the part of the architect to consider carefully the specific purposes of closets and the kinds of storage to be provided. It is obvious that there should be no waste of space, and the methods for hanging or shelving garments, shoes and accessories should be convenient. There are also protective measures that can be taken to eliminate or reduce injury to woolens and furs by moths. The weatherstripping of doors will aid in excluding dust and in retaining the aroma that destroys clothes moths when the closet is cedar-lined.

It is desirable that there be separate storage for each person. The drawer and hanging capacity and the arrangement will naturally vary with the personal habits of clients.

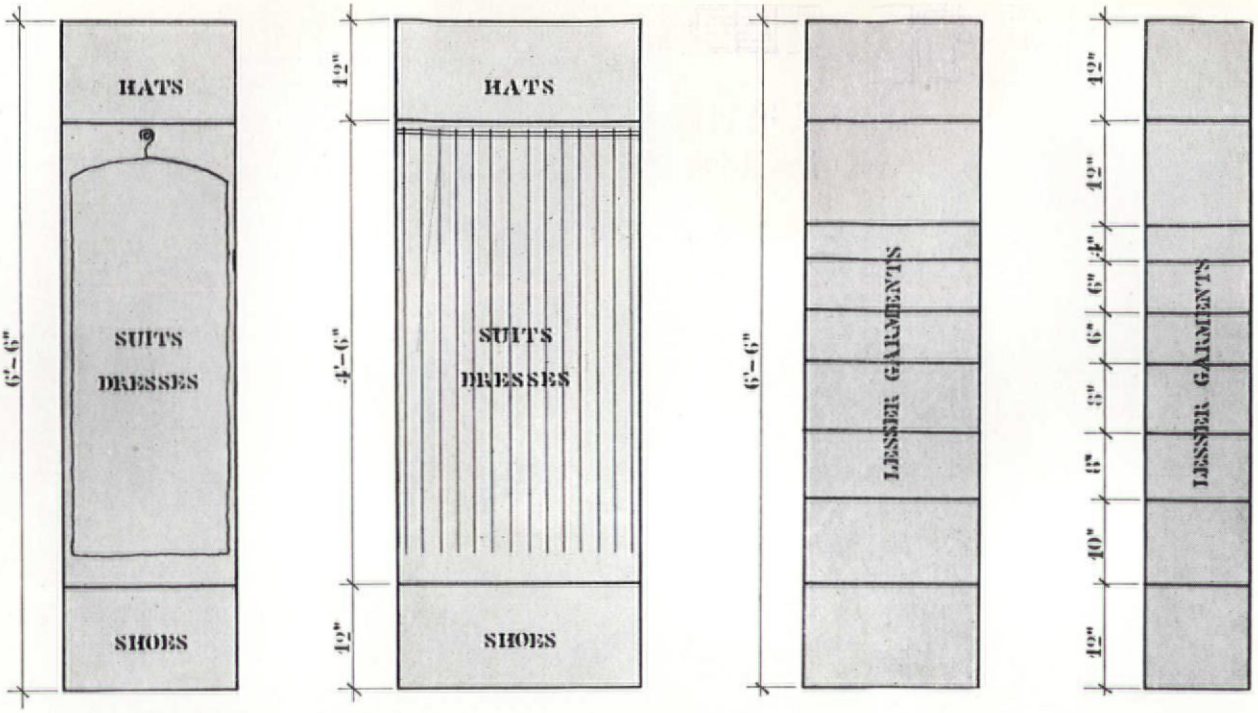
Assistance in the preparation of this article was received from the United States Department of Commerce and from manufacturers, either through their catalogues as filed in Sweet's Architectural Catalogues or by contact.



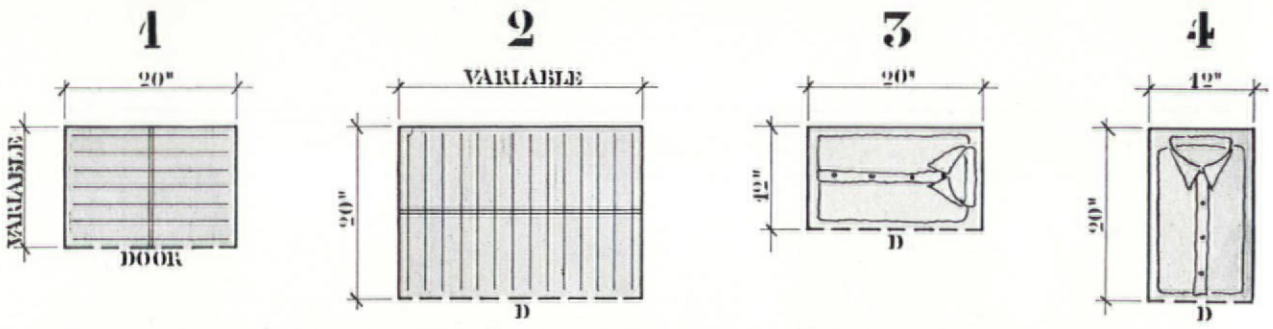
Underwood and Underwood

HOW SHOULD WEARING APPAREL BE STORED?

Convenience determines storage space, height above floor and arrangement of the clothes closet. The place for personal effects should correspond, generally speaking, to the height of garment when worn. Hats are normally stored at head height or higher, but always within arm's reach. Coats and dresses are hung at shoulder level while shoes are lowest. It would be a paradox were we to reverse the position of shoes and hats. Lesser garments are distributed between the two extremes and at levels below the eye—where selection of color or pattern can be exercised. Accessories such as collars, gloves, handkerchiefs and scarfs are grouped. Women's undergarments correspond in location to men's shirt's, but with men underwear is at a lower level.



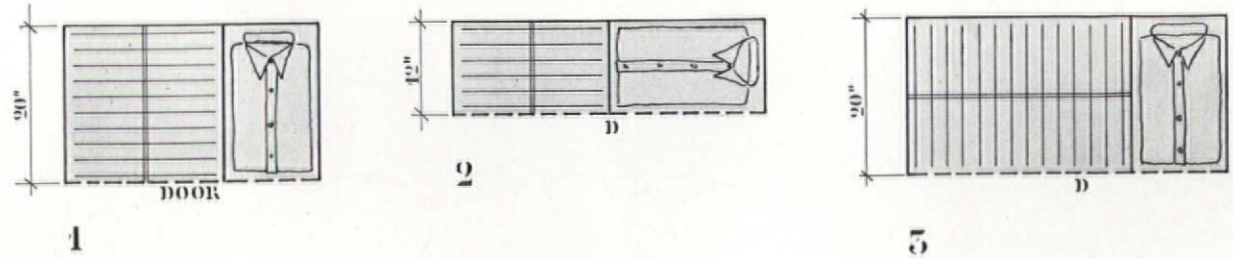
ELEVATIONS



PLANS

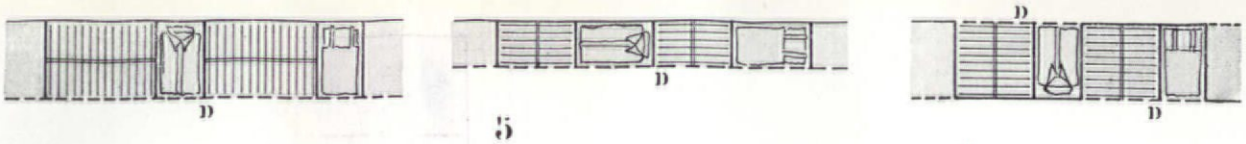
Minimal space required for wearing apparel. Inside space requirements for the average clothes closet are determined by the outside dimensions of coats, shirts and accessories.

1. See plan. Inside width of closet determined by coats and dresses hung parallel to door. The depth is variable. See elevation. The height accommodates hanging garments.
2. Depth of closet (inside) when garments are hung at right angles with door.
3, 4. Laundered shirt size determines space for lesser garments. These are stored in drawers, on shelves or in baskets, and are superposed to form a unit that may be combined with the unit for suits and dresses.



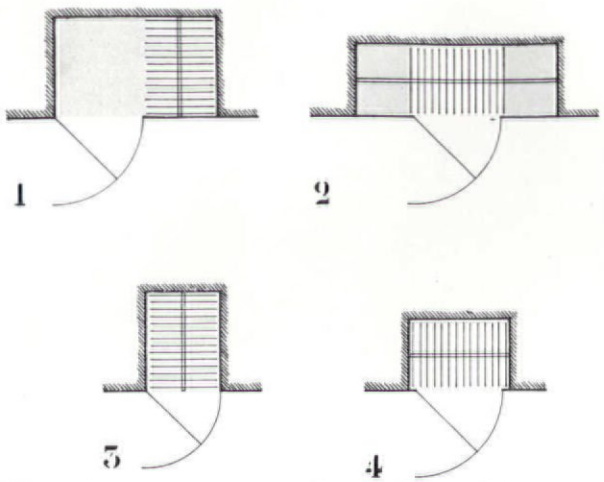
Combination of units (for one person)

1. Combination with least width that is practicable.
2. Shallowest combination.
3. Arrangement with variable width.



Combination of units (for two persons)

4. Closets of variable width.
5. Minimal depth.
6. Closets combined for adjoining rooms. Access is from alternate rooms.

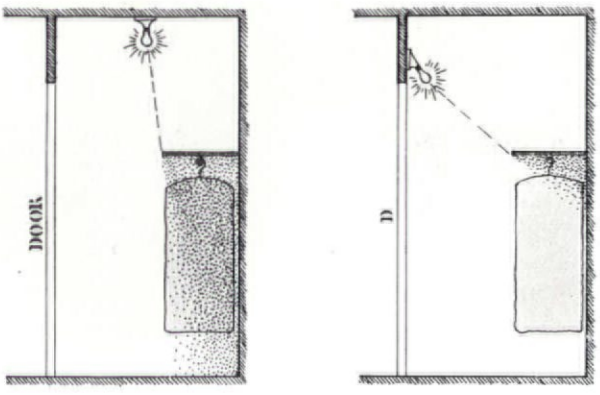


Eliminate waste space in closet. (Unused floor area indicated in gray).

1. The space for entrance is not usable for storage and is therefore "waste."
2. Spaces beyond the width of door are inaccessible and cannot be satisfactorily adapted to clothes storage.

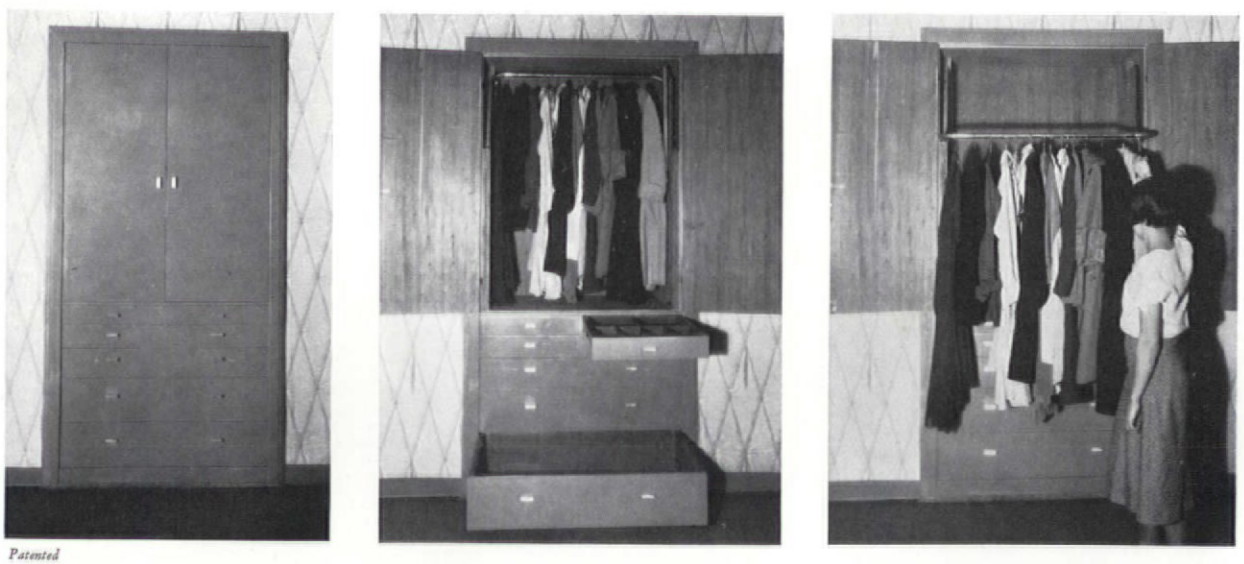
Compact Closets

3, 4. Closets with same accommodation but with direct access and without "waste." Hanger rods may be brought out to light.



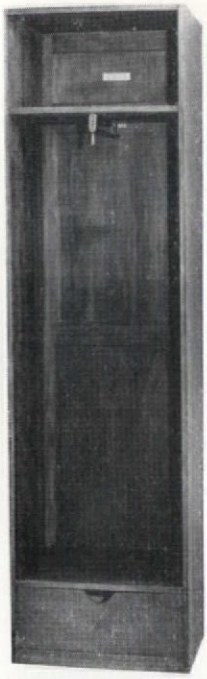
Improve lighting of the usual closet.

1. Light fixture at center of ceiling. Here the hung garments are in shadow.
2. Over-door light, operated by automatic light switch as door is opened. Hung garments are illuminated.

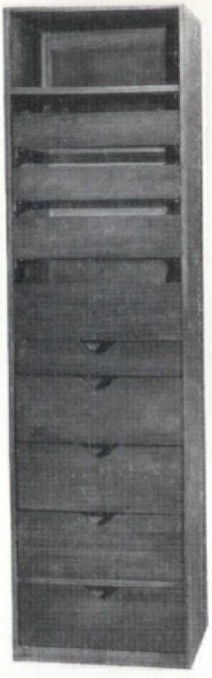


Patented

A special wardrobe with hanger rack that is lowered by a lever. The lowered garments are brought forward within convenient reach. This type of closet occupies little space and makes use of upper compartment for hanging

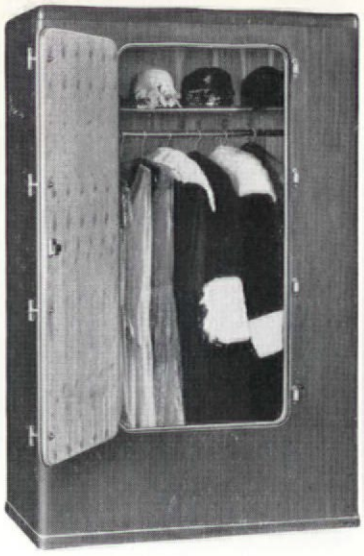


For suits, hats and shoes



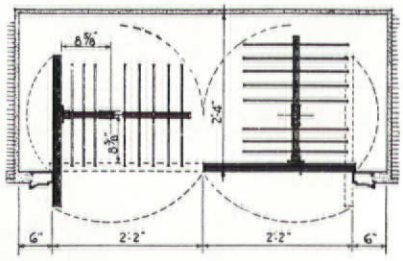
Lesser garments

Closet sections (in wood) of identical size that makes possible the combination of two or more units.

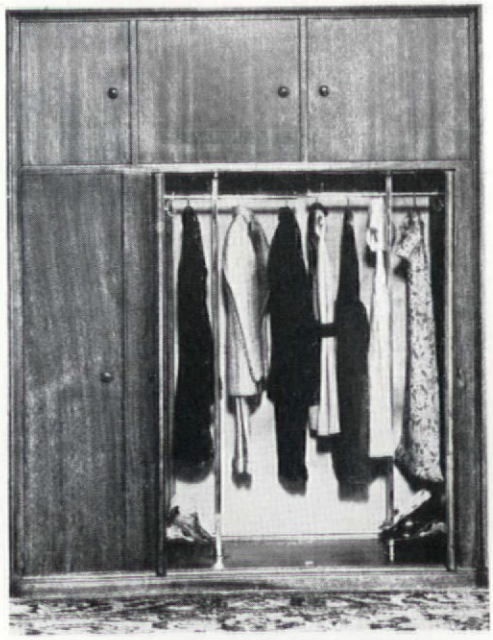


Air-tight closet for storage of furs and coats. It is cedar lined for moth protection.

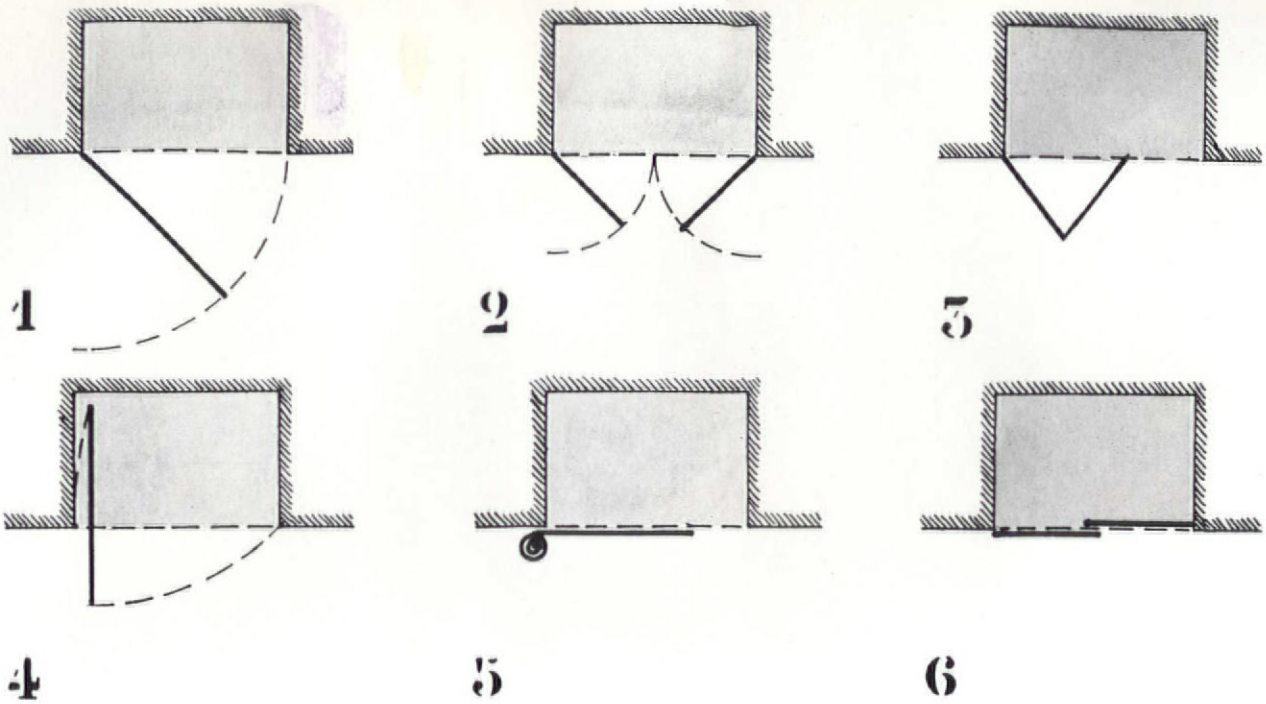
These doors may be arranged in series without mullion between doors.



Clothes closet of heavy steel, welded and made with two compartments. Drawers are of dustproof construction.

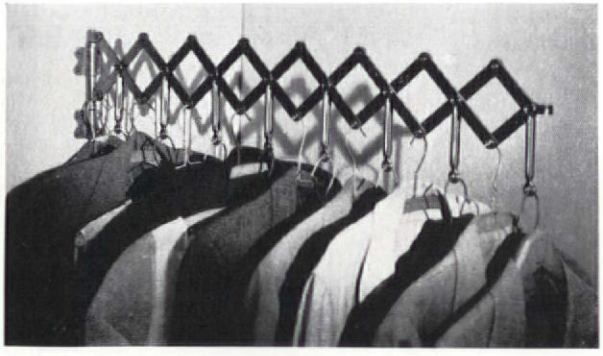


Wardrobe with a patented door which does not require space in front of closet.



DOORS

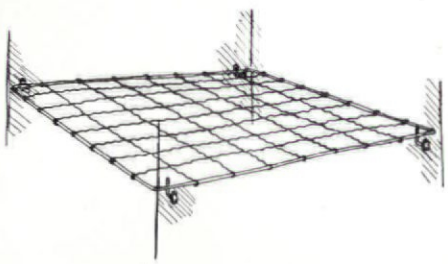
1. Single hinged door, width of closet. The single hinged door is most economical and generally most satisfactory. It should be hung so as to admit daylight from window. In a limited space the excessive swinging radius of the single door is objectionable.
2. Double swinging doors have small radius but require two movements to operate. Hardware and door costs are greater than for single door.
3. Folding door with lesser projection that operates on tracks with one movement.
4. Door of slight projection that swings into closet but requires some closet space.
5. Door that operates on spring rollers with one movement and occupies little space when open. The mechanism requires upkeep.
6. Two sliding doors with no projection. Only half of closet can be open at one time.



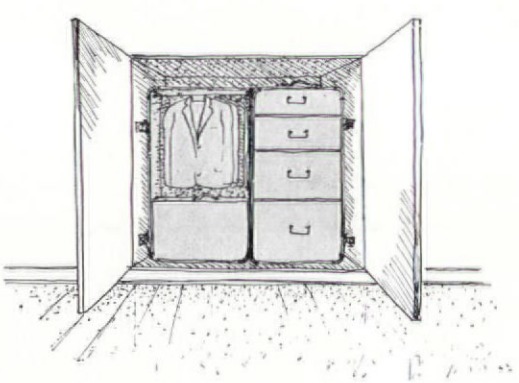
Telescopic hanger that occupies little space when compressed and which permits extension and brings clothes into plain sight.

Hanger rack that can be brought into room for selection or hanging of garments.

Basket of woven wire for garment storage that in some cases may replace drawers. Contents are visible. The basket is easily transportable because of its light weight.



Woven wire shelf (an alternate for wood or glass). The wire shelf permits free circulation of air, does not collect dust, and gives visibility from below.



Suggestion for storing the wardrobe trunk, (opened) behind closet doors. In this way it is accessible for clothes storage. It is desirable for hotels and for one who travels extensively.

PROVIDE STORAGE FOR

Men's Apparel and accessories

- Hats
- Suits
  - Business
  - Sports
  - Evening
- Overcoats
- Shirts
- Underwear
- Pajamas
- Neckties
- Collars
- Sweaters
- Gloves
- Scarfs
- Handkerchiefs
- Collar buttons, studs, clasps
- Belts
- Socks
- Shoes, slippers, pumps
- Luggage
- Walking sticks and umbrellas

Women's Apparel and accessories

- Hats
- Dresses
  - Street
  - House
  - Boudoir
  - Sports
  - Evening
- Coats
- Furs
- Undergarments
- Stockings
- Nightdresses and pajamas
- Gloves
- Woolens
- Scarfs
- Handkerchiefs
- Handbags
- Costume jewelry
- Suitcases and hatboxes
- Umbrellas and parasols
- Shoes, slippers

Full length mirror on door
Clothes brush, shoe brush, and whisk broom
Bottle, Spot remover

BIBLIOGRAPHY

—Aromatic Red Cedar Closet Lining, U. S. Department of Commerce, CS26-30, issued January 10, 1931. Price 5 cents.

—Clothes Moths and Their Control, U. S. Department of Agriculture, Farmers' Bulletin No. 1353.

—Ein Möbelbuch, by Franz Schuster, Frankfurt-am-Main.

—Das Möbel als gebrauchs-gegenstand, Stuttgart, 1928.

The Clothes We Wear, by Frank G. Carpenter. American Book Company, New York. 1926.

Selection and Care of Clothing, U. S. Department of Agriculture, 1089.

Cedar Chests by Ralph F. Windows, Bruce Publishing Company, Milwaukee. 1918.

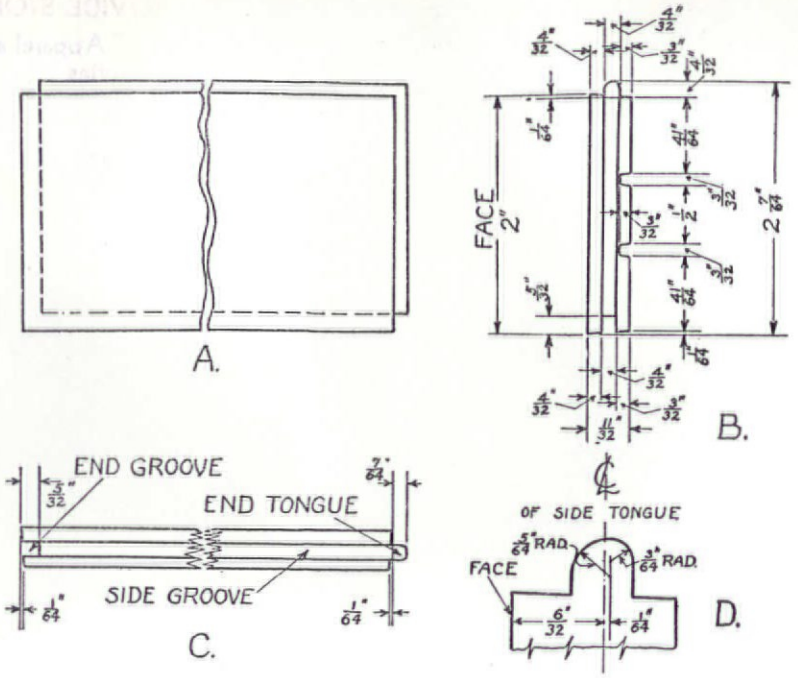
AROMATIC RED CEDAR CLOSET LINING

Closets lined with red cedar heartwood of correct thickness and construction are a very satisfactory protection against clothes moths, provided the articles to be stored are first thoroughly brushed or otherwise treated to remove the older clothes moth larvae. The volatile oil in the pure heartwood of red cedar gives off an aroma that kills the newly hatched or young larvae or worms of clothes moths. The Cedar lining for walls, floor and ceiling must be approximately airtight, ¾″ or more in thickness.

Veneering of cedar is *not* effective. Cedar closets cannot be depended upon to kill the moth, their eggs or worms after they are one-half to full grown or after they are 3 or 4 months old.* It is therefore essential that clothing hung or stored in cedar closets or chests be free from the older larvae or moth worms.

*Clothes Moths and Their Control, U. S. Department of Agriculture, Farmers' Bulletin No. 1353, p. 36.

Cedar lining detail with dimensions and approved profile for jointing. The cedar lining for walls should be at least 3/8" thick. The flooring of cedar is preferably 13/16" in thickness as a minimum and may slope toward door or may be raised approximately 2" above level of outside room floor.



CONSTRUCTION OF RED CEDAR CLOSETS

The U. S. Department of Commerce recommends the following construction: "The entire surface of the closet should be covered, including the inside of the door, with 3/8" cedar lining. It is preferable to use 13/16" cedar flooring for covering the floors, but 3/8" may be substituted if desired. The door should be tight fitting, and, if necessary, it should be weather-stripped.*

"In lining a closet already built and plastered, the lining may be placed directly on the plaster if care is exercised to nail on the studding. Face nailing is recommended, but blind nailing may be used if preferred. It is not necessary that the end joints come directly over the studding as the end matching will hold any short pieces in perfect position that may be placed between studding.

"Red cedar shelving is recommended. This adds to the general appearance of the closet or storage room and also increases its efficiency. It is also recommended that all corners be fitted with cedar quarter-round molding, since the more cedar that can be economically worked into the installation the greater the efficiency, for it is the aroma that is thrown off from the cedar that checks destruction by moths, and the greater the quantity of cedar, the greater the amount of aroma.

FOR USE IN NEW HOME

"Where installation is being made in new homes, it is recommended that the closet be lined with wall board, deadening felt, or other insulating material free from offensive odors, or else plastered, but it may be nailed directly on the studding. In this event it is best to close all spaces between studding at the floor and at the ceiling in order to prevent the escape of aroma between the studs. Another method of preventing this loss of aroma from the back side of the lining is to coat it with a suitable material which will effectively seal the wood. Such protective coatings as shellac, paraffine, or lacquer, which are quick drying, have been found effective for this purpose.

"Positively no paint, varnish, or other finish should be used on the interior of the closet, since this would seal the wood and prevent the volatilization of the cedar oil which is the effective agent in protecting stored material from ravages by clothes moths. Furthermore, painted or varnished surfaces within the closet may soften or become tacky and in this condition may damage garments coming in contact with them.

USE OF CEDAR CLOSETS, CHESTS, AND STORAGE ROOMS

"All articles should be free from moth eggs and larvae when placed in a cedar chest or closet. This can best be accomplished by dry cleaning. If this can not be done conveniently, the articles should be thoroughly brushed, aired, and sunned.

"It is absolutely necessary that the door be kept closed except when articles are being placed in or removed from the closet. Failure to adhere strictly to this rule materially decreases the efficiency of the closet or other cedar storage receptacle."

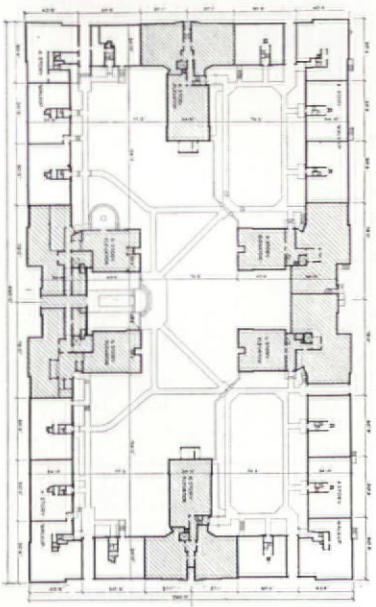
*Aromatic Red Cedar Closet lining, U. S. Department of Commerce, CS 26-30, issued January 10, 1931.

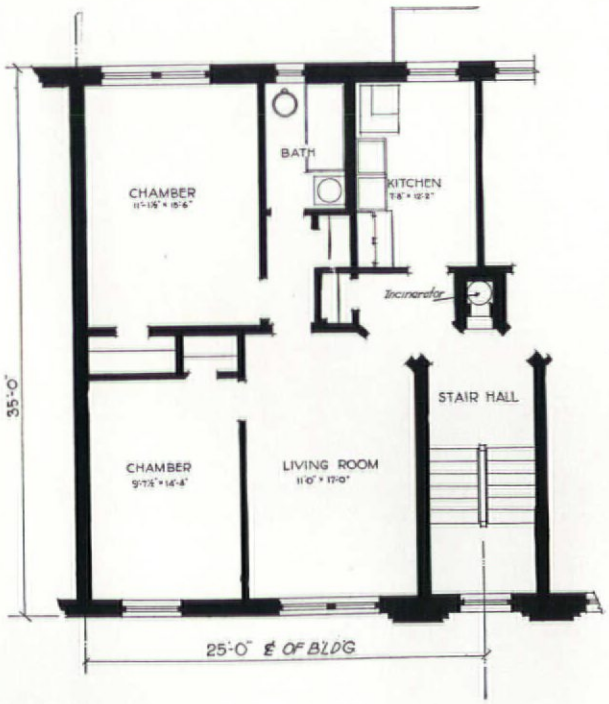
BASIC UNITS FOR WALK-UP AND ELEVATOR TYPES OF APARTMENTS

By ROBERT L. DAVISON

The differences of plan problems presented by the walk-up and elevator types of apartment houses are evident in the following analysis of plan elements from the Society of Phipps Houses at Sunnyside, Long Island, and other housing developments by Clarence S. Stein, architect.

	4-STORY WALK-UP		6-STORY ELEVATOR		TOTAL	
	Number	%	Number	%	Number	%
Apartments	130	38	216	62	346	100
Rooms	524	43	686	57	1210	100
Ground Coverage of Bldgs.	29, 216 sq. ft.	51	28,000 sq. ft.	49	57,216 sq. ft.	100 (43% of lot)
TOTAL AREA ALL FLOORS	116,864	41	168,000	59	284,864	100

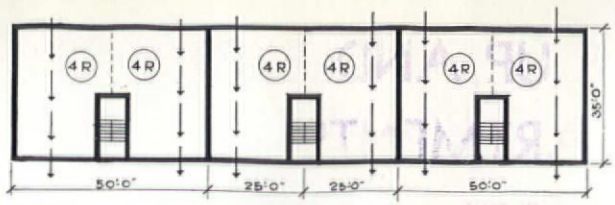




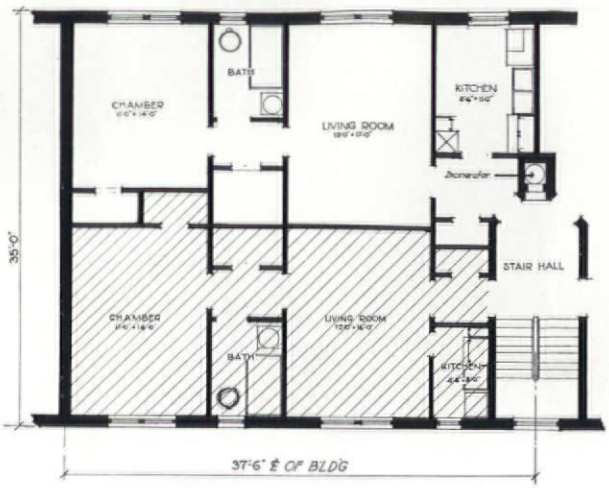
WALK-UP APARTMENT ELEMENTS

The walk-up portion consists of 1½-, 2½-, 3- and 4-room apartments that are grouped to form three basic plan elements. These have combined stairhalls.

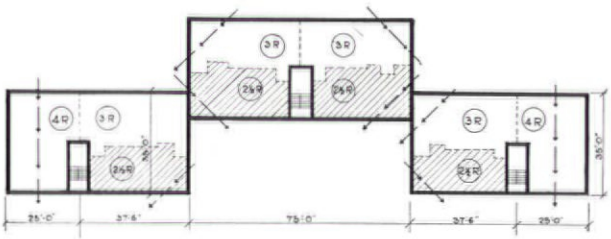
The 4-room apartment is the element from which the other units are developed. It has been evolved through many years of experience in designing moderate-priced apartment buildings for limited dividend companies who have sought to give maximum convenience with low rentals rather than buildings which would rent because of location or entrance foyer.



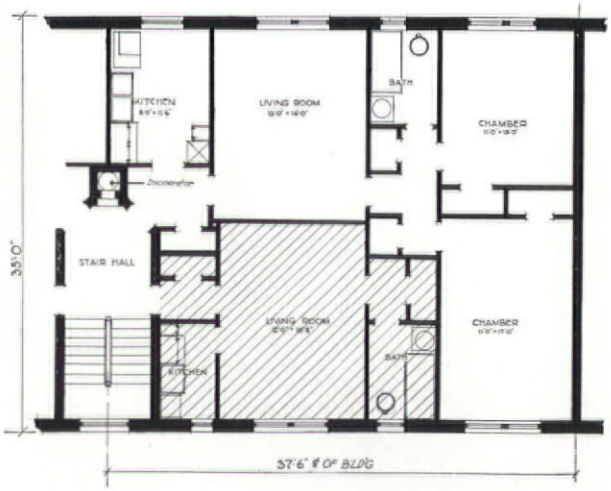
The outstanding characteristic of the 4-room apartment is its ability to obtain cross-ventilation, permitting the the use of this element in straight rows.



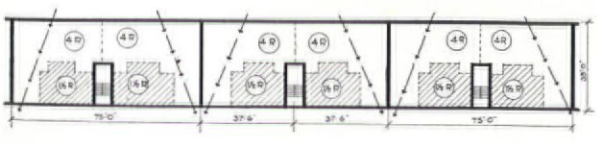
The 3-room unit combined with the 2½-room unit was developed to meet the requirement for smaller apartments. The 2½ rooms on the stair side of the unit are the logical result of providing space for the stair hall.



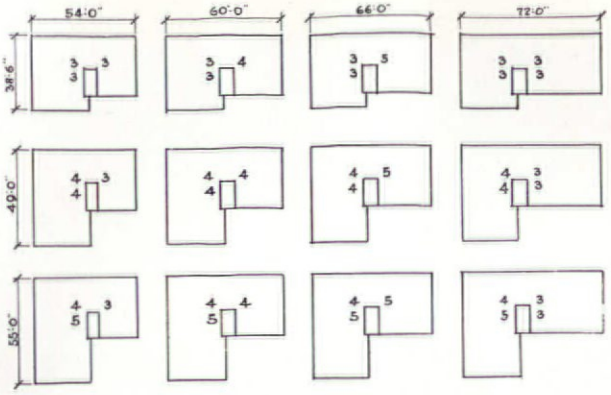
It is advisable as far as possible to restrict the use of this unit to those portions of the plan where an offset can be obtained. This will permit exposure on the end of the element, giving cross-ventilation.



The 4- and 1½-room apartment combination unit is a variation which may be used where it is desirable to have a 37½′ unit on one or both sides of the stairhall instead of the 25′ frontage of the standard 4-room apartment.



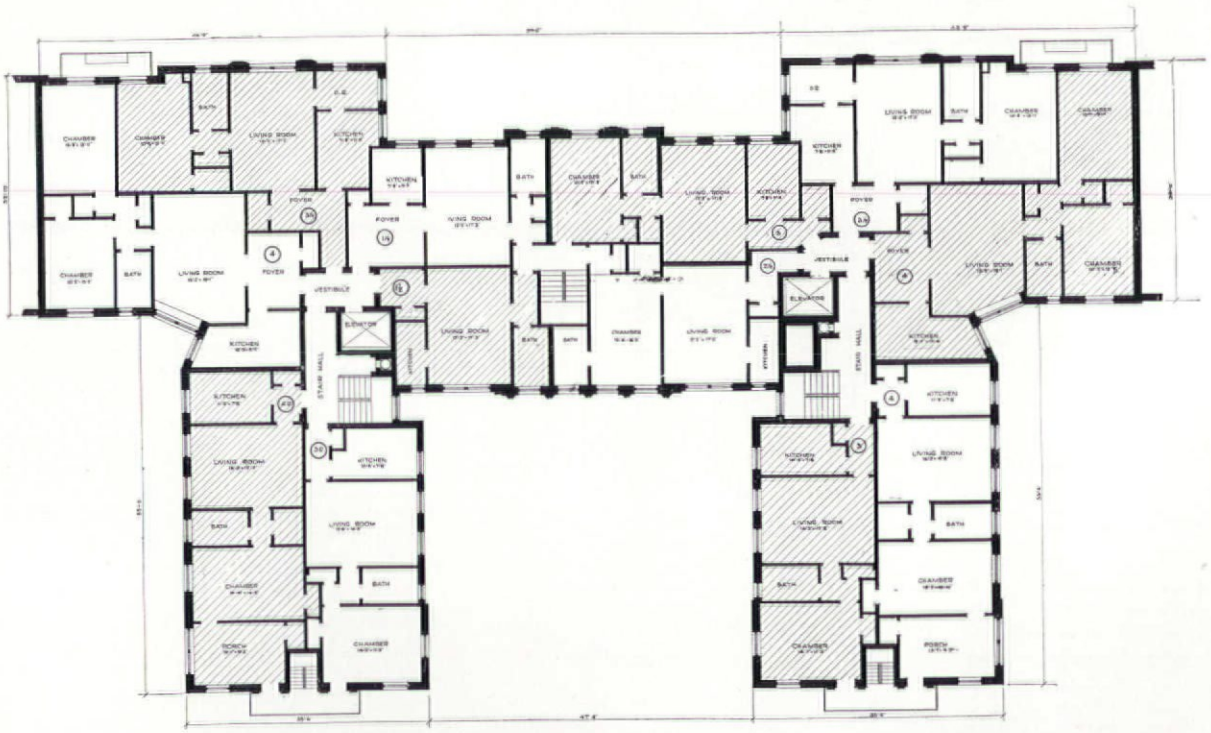
This arrangement permits cross-ventilation in the 4-room apartment. The 1-room apartment is limited to such ventilation as may be obtained through the stairhall.



The corner units forming T's in plan develop somewhat different problems than the simple I-units just discussed. However, very much the same elements can be combined in a variety of ways as shown in the adjoining diagram.

ELEVATOR APARTMENT ELEMENTS

The problem of combining apartments into basic units around an elevator shaft is quite different from that met in the walk-up type of apartment. In the study of the Phipps apartments it was estimated that at least 100 rooms were required to be served by an elevator to make its use economical. This, together with the height limitation of 6 stories for semi-fireproof construction, made it essential to use a T-unit where elevators are required. The fact that the stem of the T is open on three sides permits the use of 2½ or 3-room apartments on both sides of the central walls in the stem unit.

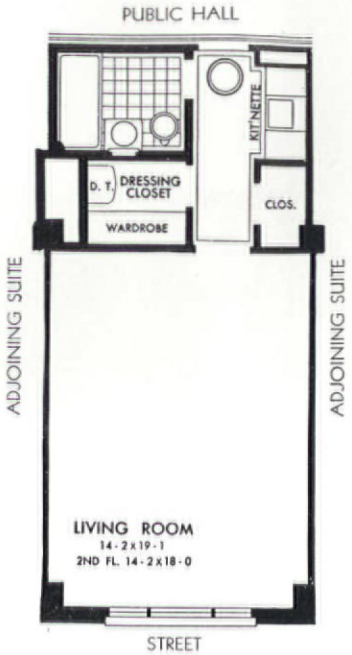


It is necessary to provide an additional fire-escape where two T's meet or else to provide a fire stair well as shown on the plan. Careful estimates indicated that the stair well was less expensive than the fire-escape for this plan.

PLAN STUDIES FOR APARTMENT SUITES OF ONE, TWO AND MORE ROOMS

COMMENTS BY ARTHUR C. HOLDEN, ARCHITECT

ONE-ROOM APARTMENT PLANS

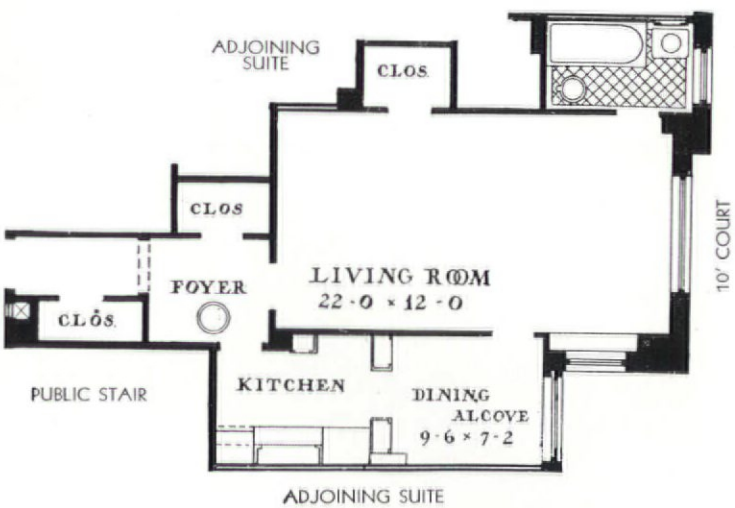


1. Bath and kitchen have no daylight. Exterior wall is used entirely for lighting principal rooms, forcing the subordinate elements to the interior.

THE MAJOR LANE, 148 EAST 48TH STREET, NEW YORK CITY
SUGARMAN AND BERGER, ARCHITECTS

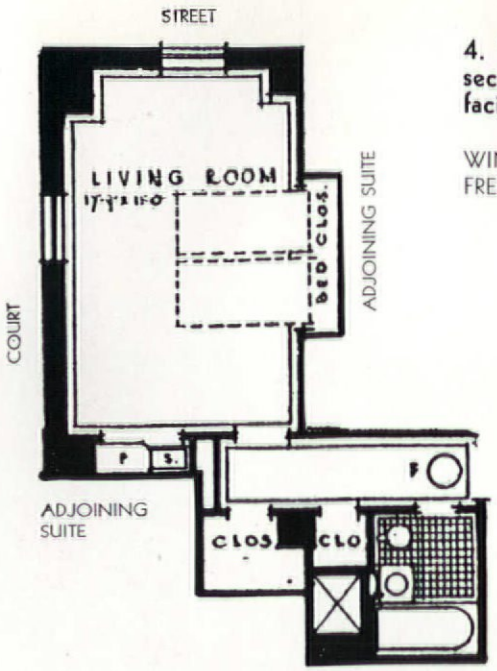
2. Kitchen has daylight. The subordinate elements are placed between long rooms, thus securing outside air for the kitchenette and making it unnecessary to pass the stove in entering.

319 EAST 50TH STREET, NEW YORK CITY
GEORGE G. MILLER, ARCHITECT



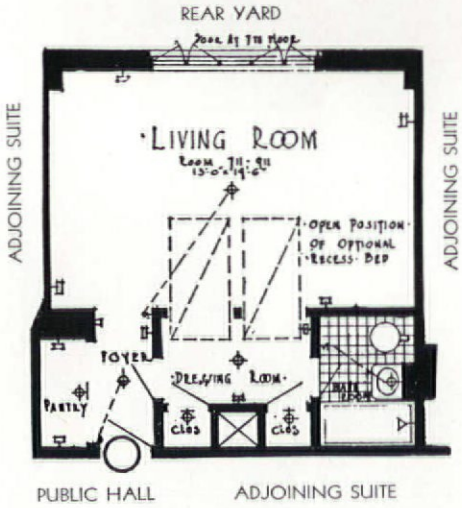
3. Both kitchen and bath have daylight. The architect has insured outside air by backing bath and kitchenette with the secondary facilities of the apartments. Most important of all, access to the kitchen without passing through the living room is provided.

424 EAST 52ND STREET, NEW YORK CITY
GEORGE G. MILLER, ARCHITECT



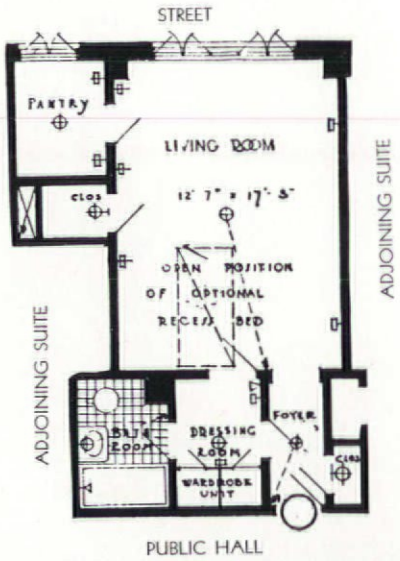
4. Variation of Type 1. One-room type with corner light secured by court frontage. Twin in-a-door beds. Cooking facilities in alcove at end of living room.

WINDSOR TOWER, TUDOR CITY, NEW YORK CITY
FRED F. FRENCH CO., ARCHITECTS



5. Variation of Type 1. The wide frontage of this living room is toward the southern yard. The in-a-door beds fold into the dressing room. The closet space is cramped because of the ducts made necessary by the interior bath.

THE TOWN HOUSE, 108 EAST 38TH STREET, NEW YORK CITY
BOWDEN AND RUSSELL, ARCHITECTS

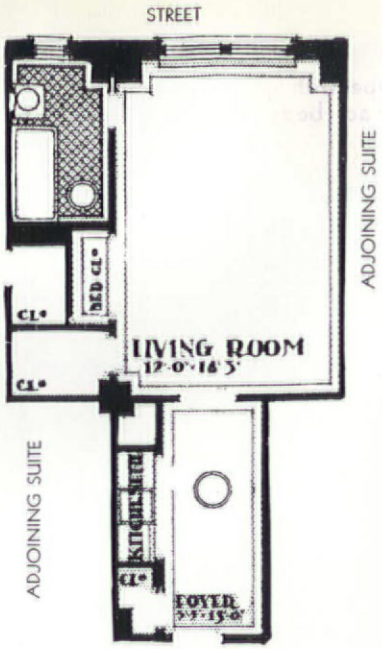


6. Variation of Type 3. A one-room apartment, intended for single occupancy, in the same building as above. It is necessary to cross the living room diagonally to reach the pantry although it has outside light.

THE TOWN HOUSE, 108 EAST 38TH STREET, NEW YORK CITY
BOWDEN AND RUSSELL, ARCHITECTS

7. The same type of planning as Type 2 except that the bath, instead of the kitchenette, is given outside air and developed into a practical dressing room by the use of a glass partition. The entry is unfortunately small to be encumbered by the kitchenette.

THE MAJOR LANE, 148 EAST 48TH STREET, NEW YORK CITY
SUGARMAN AND BERGER, ARCHITECTS

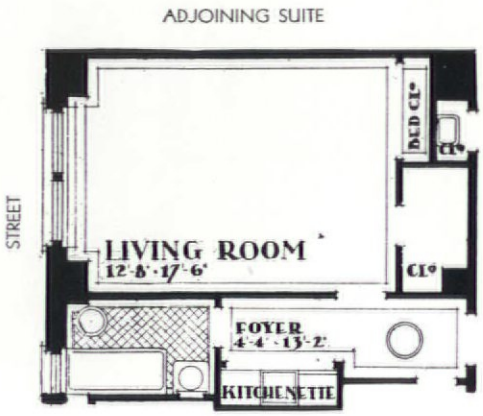


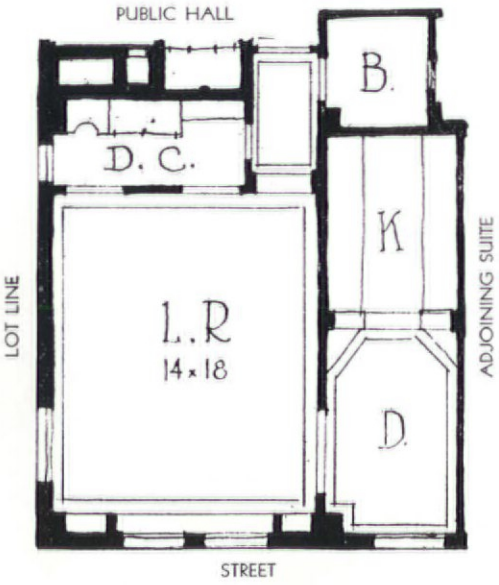
8. A similar type to that of preceding plan except that the foyer, although still encumbered by the kitchenette, is ample in size.

205 EAST 78TH STREET, NEW YORK CITY
SUGARMAN AND BERGER, ARCHITECTS

9. A still further development of the same plan. The foyer is so arranged that one need not pass the stove to enter the living room, and the bath is placed at the end of the foyer instead of being entered from the living room.

205 EAST 78TH STREET, NEW YORK CITY
SUGARMAN AND BERGER, ARCHITECTS



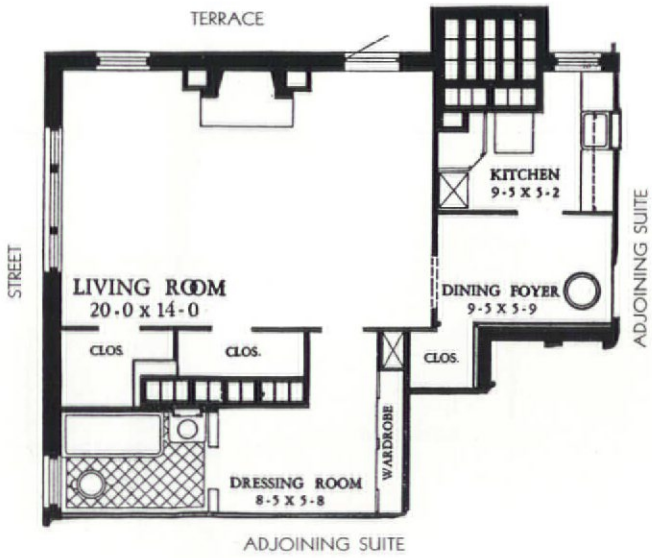


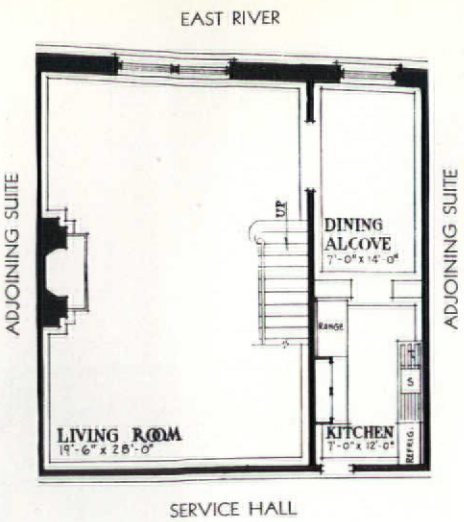
10. Living room and dinette type, where the dining alcove has outside air. In-a-door beds are provided with space fitted up as a dressing wardrobe.

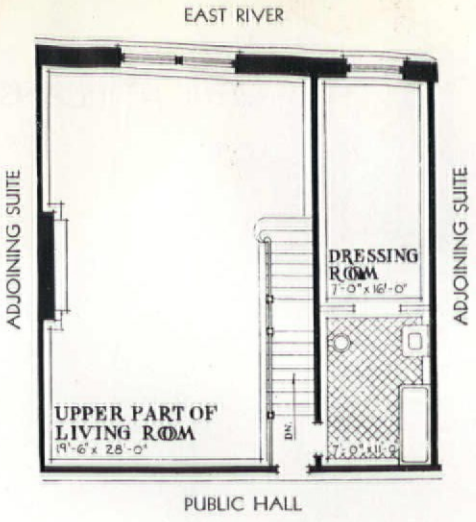
TUDOR HALL APARTMENTS, LAKE STREET, OAKLAND, CALIFORNIA
MILLER AND WARNECKE, ARCHITECTS

11. A city penthouse type, where the foyer is free of secondary facilities and the bath is approached through a commodious dressing room. Both kitchenette and bath enjoy outside air.

220 EAST 73RD STREET, NEW YORK CITY
EMERY ROTH, ARCHITECT

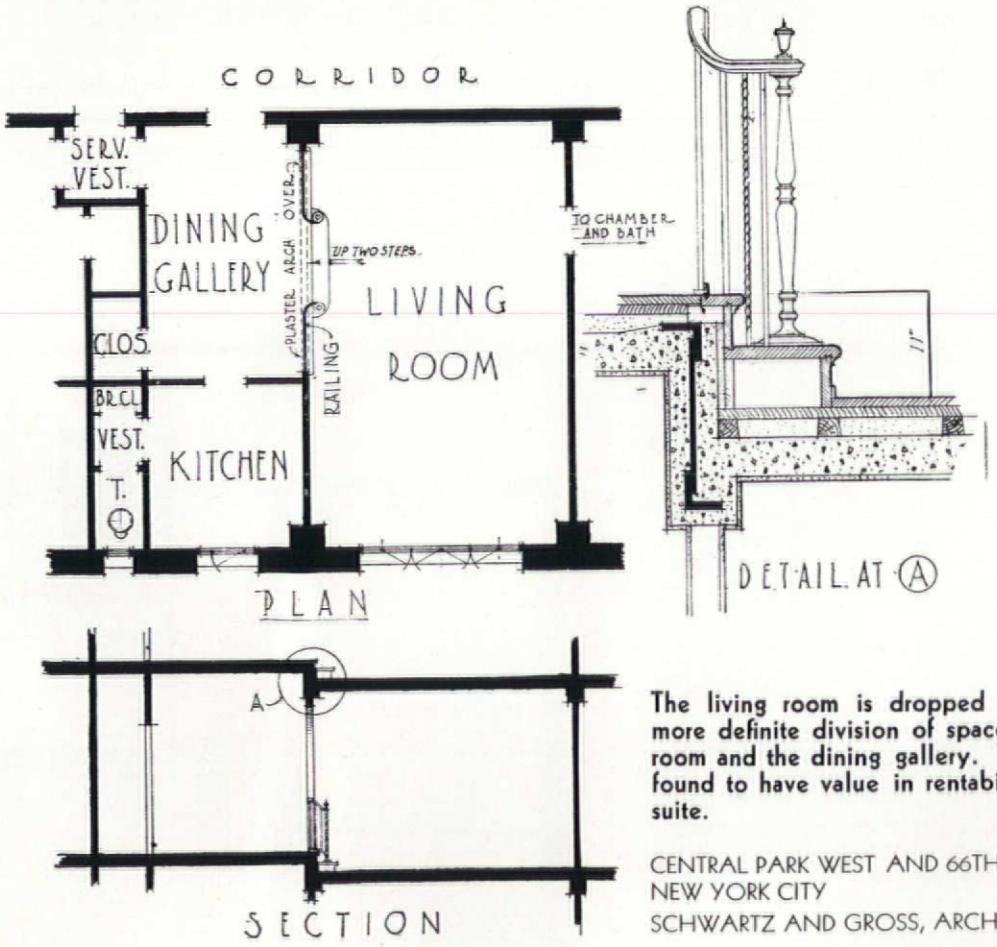






A special case where available space below grade with river view is utilized to produce a double-height living room. The kitchen is entered at the lower level. The one objectionable feature is that the main entrance opens on a narrow landing where the entrance and bathroom doors are cramped for space.

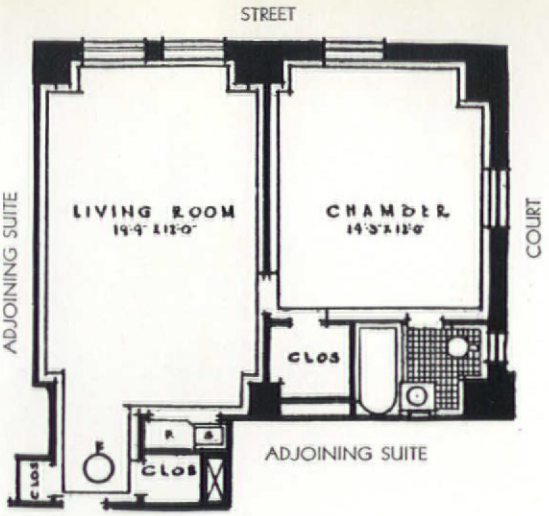
ONE BEEKMAN PLACE, NEW YORK CITY
SLOAN AND ROBERTSON, ARCHITECTS; CORBETT, HARRISON AND MAC MURRAY
CONSULTING ARCHITECTS



The living room is dropped two steps, giving a more definite division of space between the living room and the dining gallery. This feature has been found to have value in rentability of the apartment suite.

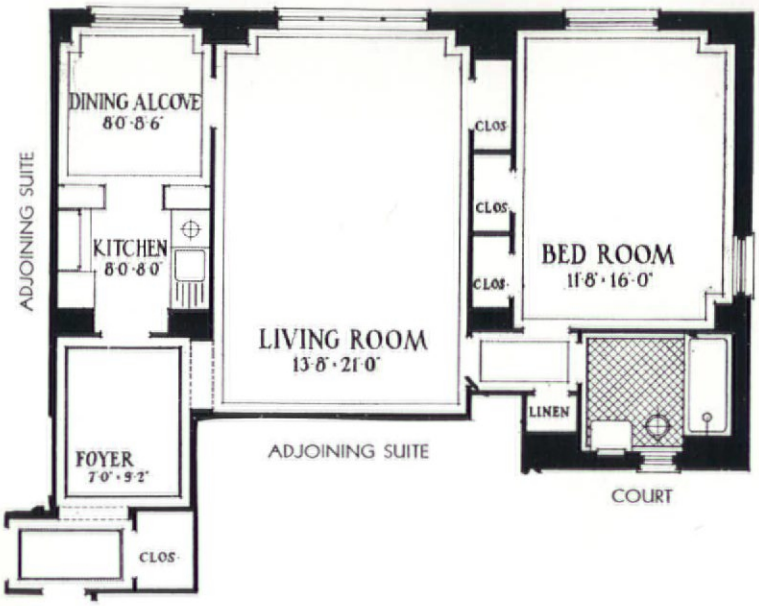
CENTRAL PARK WEST AND 66TH STREET,
NEW YORK CITY
SCHWARTZ AND GROSS, ARCHITECTS

TWO-ROOM APARTMENT PLANS



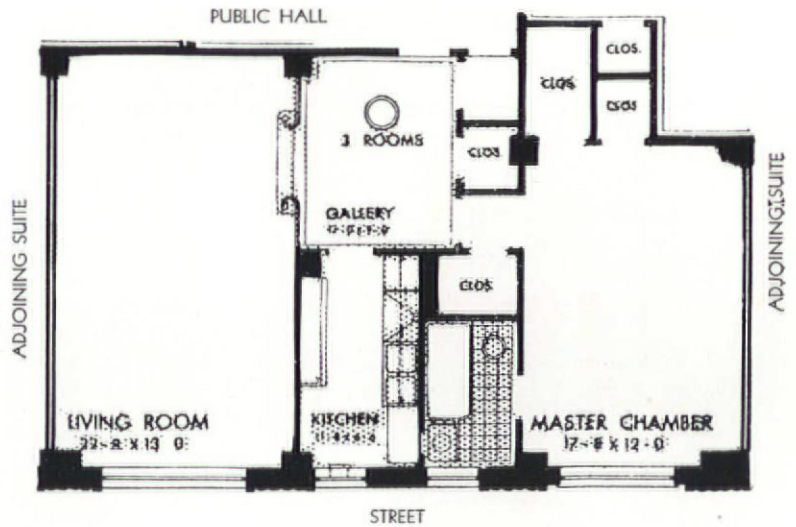
12. A compact two-room type, practically without foyer, and with kitchen cabinet at entrance end of the living room.

WINDSOR TOWER, NEW YORK CITY
FRED F. FRENCH CO., ARCHITECTS



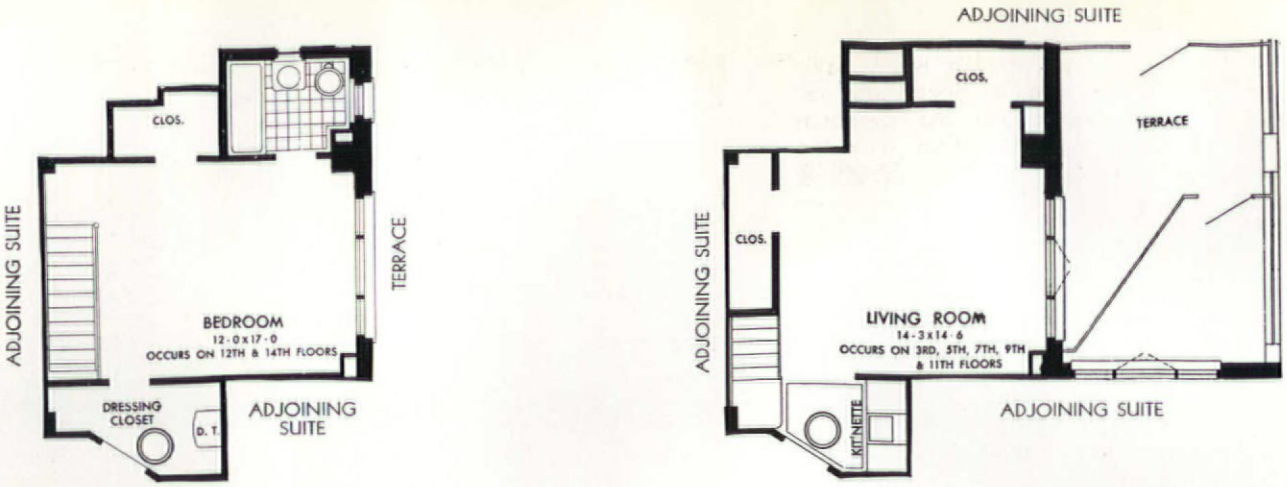
13. A straightforward two-room-and-dinette plan where separate access is provided from the foyer to either living room or kitchen. Privacy of the bedroom and bath is afforded by the second foyer.

12 EAST 88TH STREET, NEW YORK CITY
ROSARIO CANDELA, ARCHITECT



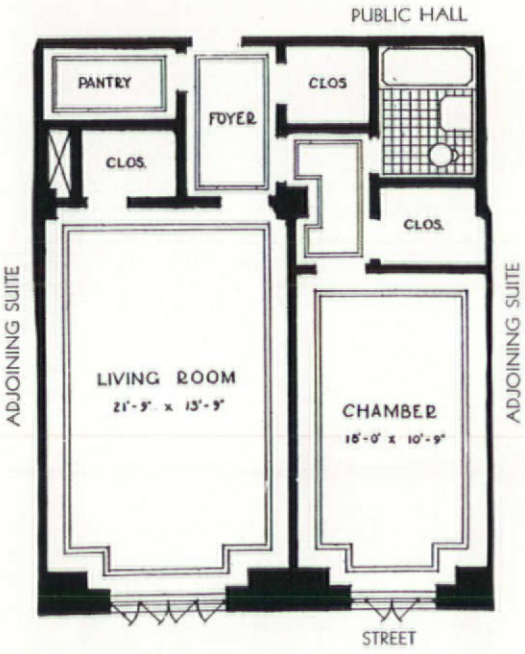
14. A central foyer type where living room, kitchen and bedroom are all entered directly from the foyer. The living room has been dropped two steps below the level of the foyer. (See detail on opposite page.)

THE NEW AMSTERDAM, 200 WEST 86TH STREET, NEW YORK CITY
SCHWARTZ AND GROSS, ARCHITECTS



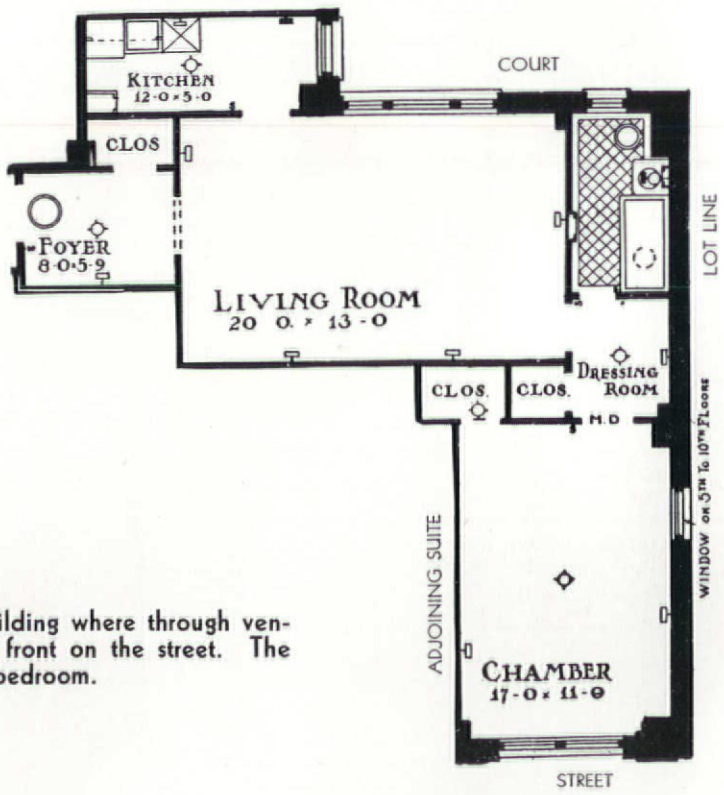
15A and 15B. An attempt to utilize vertical space for the two-room apartment where horizontal space accessible to the penthouse terrace is limited. The stair and kitchenette are cramped at the entrance.

THE MAJOR LANE, 148 EAST 48TH STREET, NEW YORK CITY
SUGARMAN AND BERGER, ARCHITECTS



16. Central foyer type with narrow frontage on the outside, forcing both kitchenette and bath to the interior.

THE BRITTANY, 55 EAST 10TH STREET, NEW YORK CITY
FARRAR AND WATMOUGH, ARCHITECTS

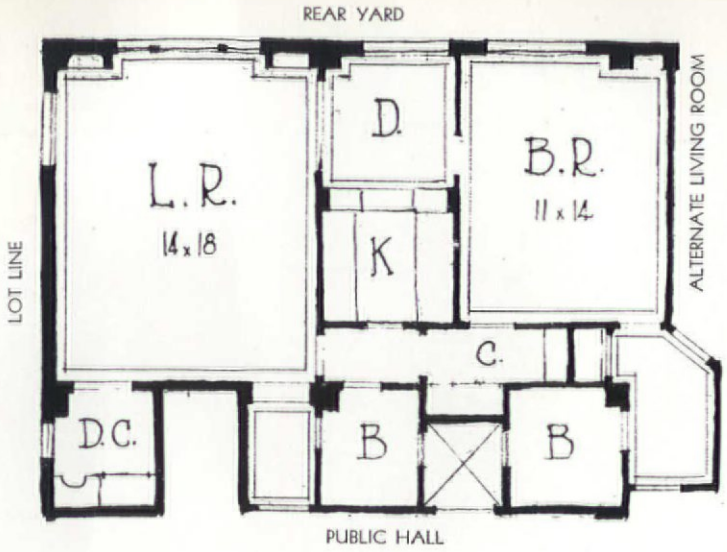


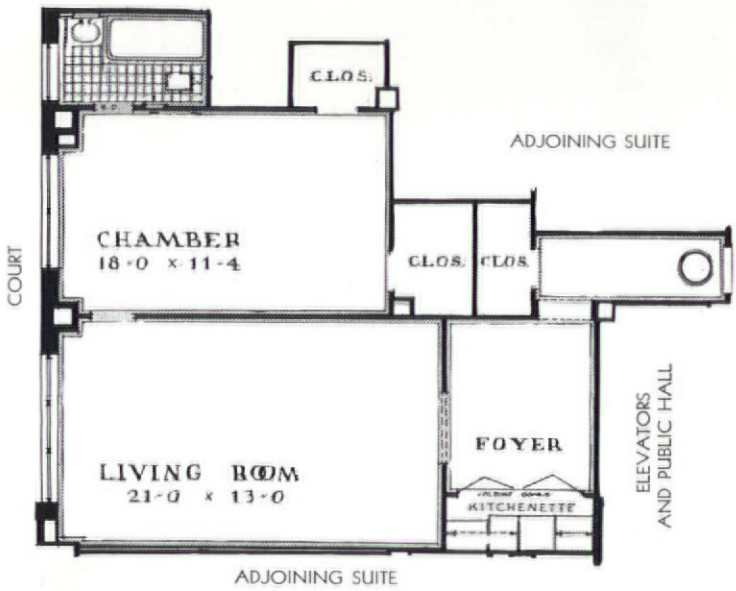
17. A two-room apartment in an H-shaped building where through ventilation is possible. The living room does not front on the street. The secondary foyer gives privacy to both bath and bedroom.

319 EAST 50TH STREET, NEW YORK CITY
GEORGE G. MILLER, ARCHITECT

18. A Western type of plan, where baths and bedroom are so arranged with respect to the entries that the bedroom may be rented in connection with the living room on either side.

TUDOR HALL APARTMENTS, LAKE STREET, OAKLAND, CALIFORNIA
MILLER AND WARNECKE, ARCHITECTS



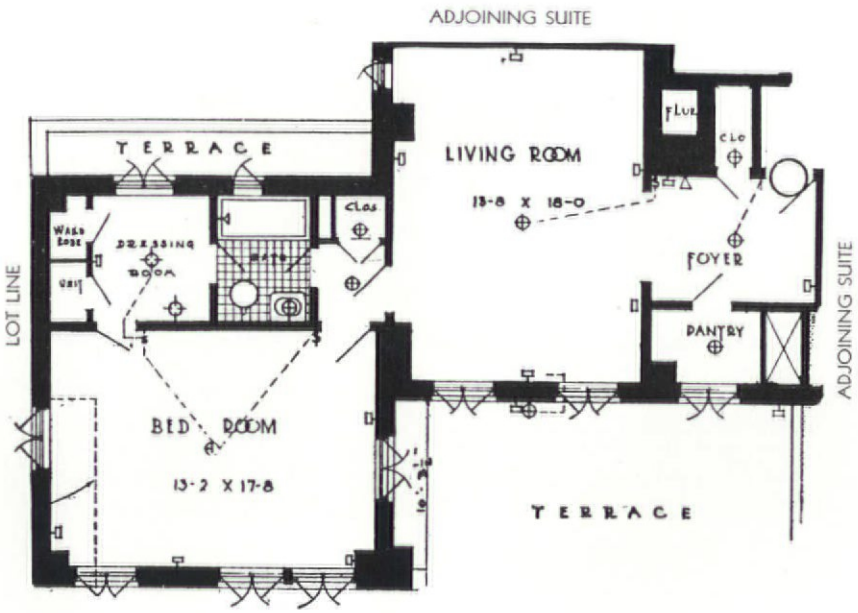


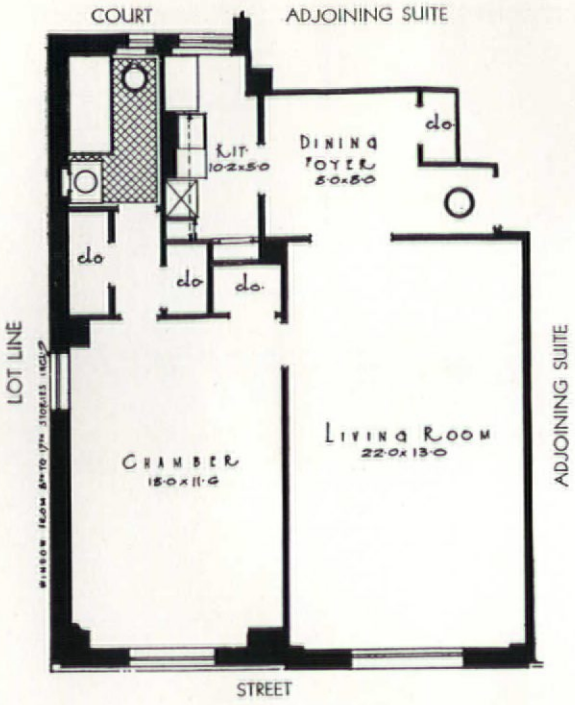
19. The angle type of foyer which widens out sufficiently to permit dining facilities. It is necessary to walk the length of the living room to enter the bedroom and then to cross the bedroom to enter the bath.

414 EAST 52ND STREET, NEW YORK CITY
EMERY ROTH, ARCHITECT

20. A through ventilation type which becomes possible at penthouse levels. The pantry has both outside light and privacy. The second foyer protects both bath and bedroom, and the dressing room is isolated.

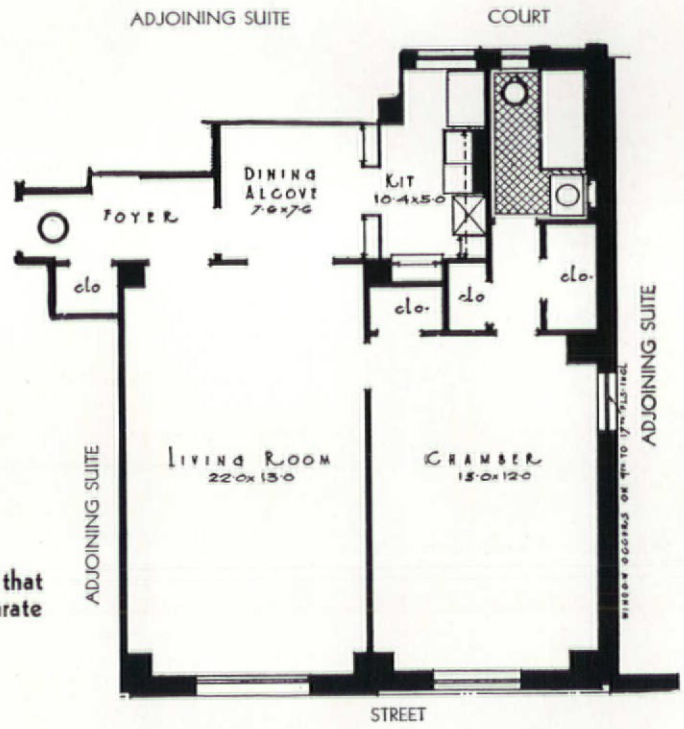
THE TOWN HOUSE, 108 EAST 38TH STREET, NEW YORK CITY
BOWDEN AND RUSSELL, ARCHITECTS





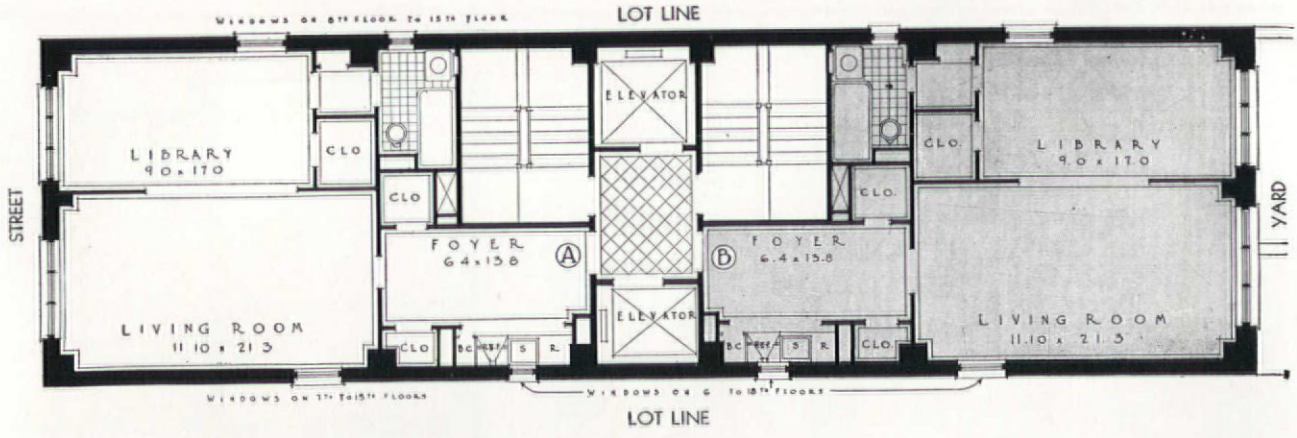
21. A square foyer does duty for dining. Both kitchen and bath have access to the outer air, but the bath cannot be reached from the living room without passing through the bedroom.

227 EAST 57TH STREET, NEW YORK CITY
BOAK AND PARIS, ARCHITECTS



22. The same type and plan as above, except that the foyer has been expanded to provide separate dining alcove.

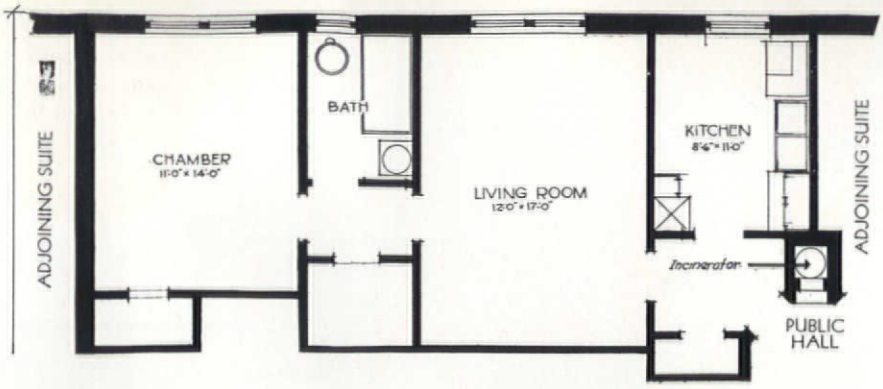
227 EAST 57TH STREET, NEW YORK CITY
BOAK AND PARIS, ARCHITECTS



23. A narrow lot type, where almost a third of the building space is taken up with service facilities. Baths and kitchenettes take temporary advantage of borrowed light over the lot line.

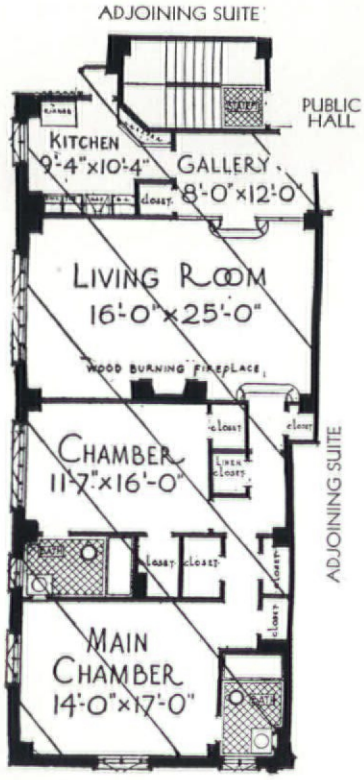
GREEN PARK, 7 PARK AVENUE, NEW YORK CITY
EMERY ROTH, ARCHITECT

APARTMENT PLANS OF THREE AND MORE ROOMS



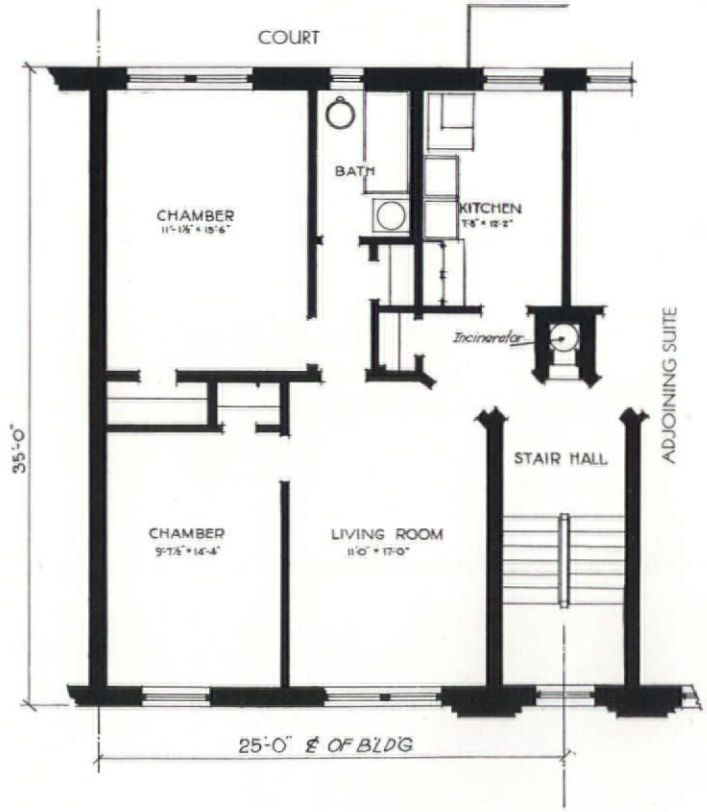
24. A 3-room type. Generous frontage for a narrow apartment. The kitchen is increased to the size of a small room. The living room must be crossed to enter the bedroom or the bath.

PHIPPS GARDEN ESTATE, SUNNYSIDE, N. Y.
CLARENCE S. STEIN, ARCHITECT



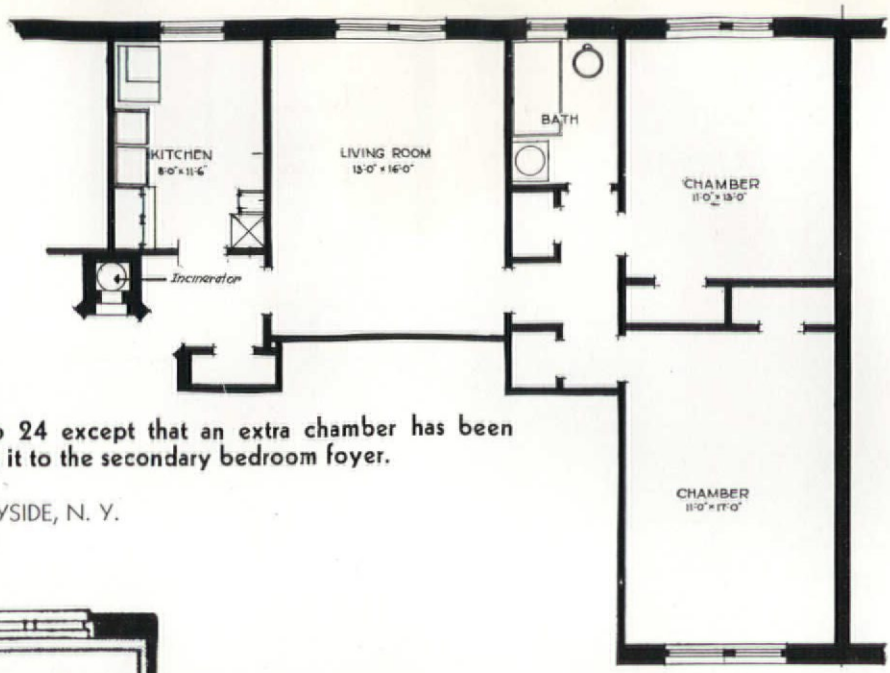
25. A 3½-room type. The living room must be crossed to reach the two sleeping rooms, each of which is provided with a bath ventilated to the outer air. The floor of the living room is two steps below the rest of the apartment.

180 EAST 79TH STREET, NEW YORK CITY
SCHWARTZ AND GROSS, ARCHITECTS



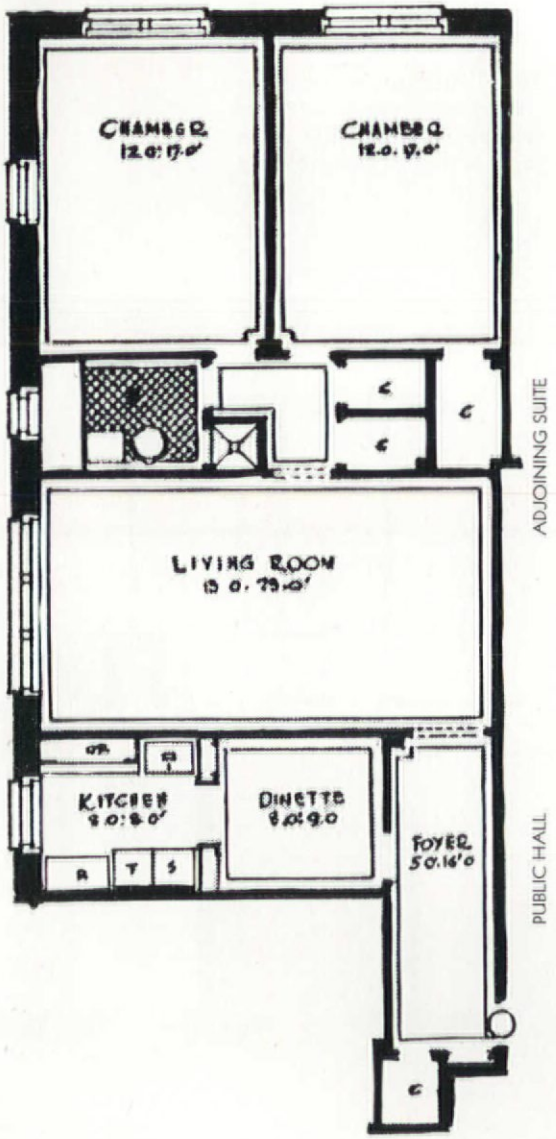
26. A 4-room type. The second chamber is isolated from the single bath which can be reached only by passing through the living room.

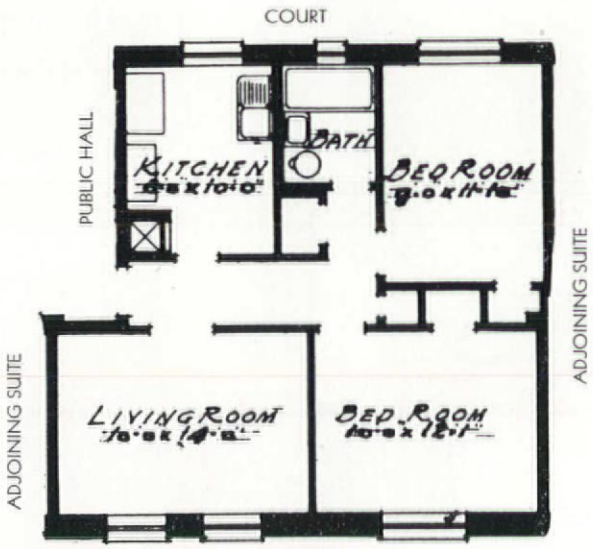
PHIPPS GARDEN ESTATES
SUNNYSIDE, N. Y.
CLARENCE S. STEIN, ARCHITECT



27. A 4-room type, similar to 24 except that an extra chamber has been added at the rear by connecting it to the secondary bedroom foyer.

PHIPPS GARDEN ESTATES, SUNNYSIDE, N. Y.
CLARENCE S. STEIN, ARCHITECT



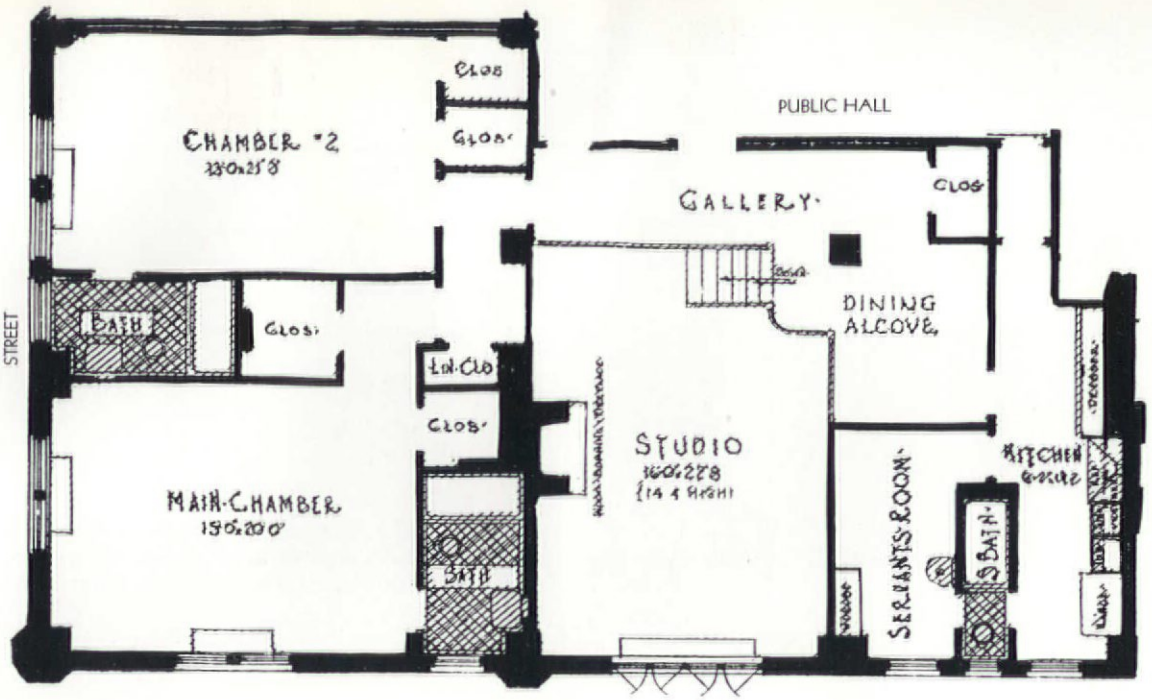


28. A 4-room suite where all rooms are so arranged that each may be entered separately from the central private hall without passing through any other room.

CHELLIS AUSTIN APARTMENTS, NEWARK, N. J.
EDMOND C. STOUT, ARCHITECT-ENGINEER

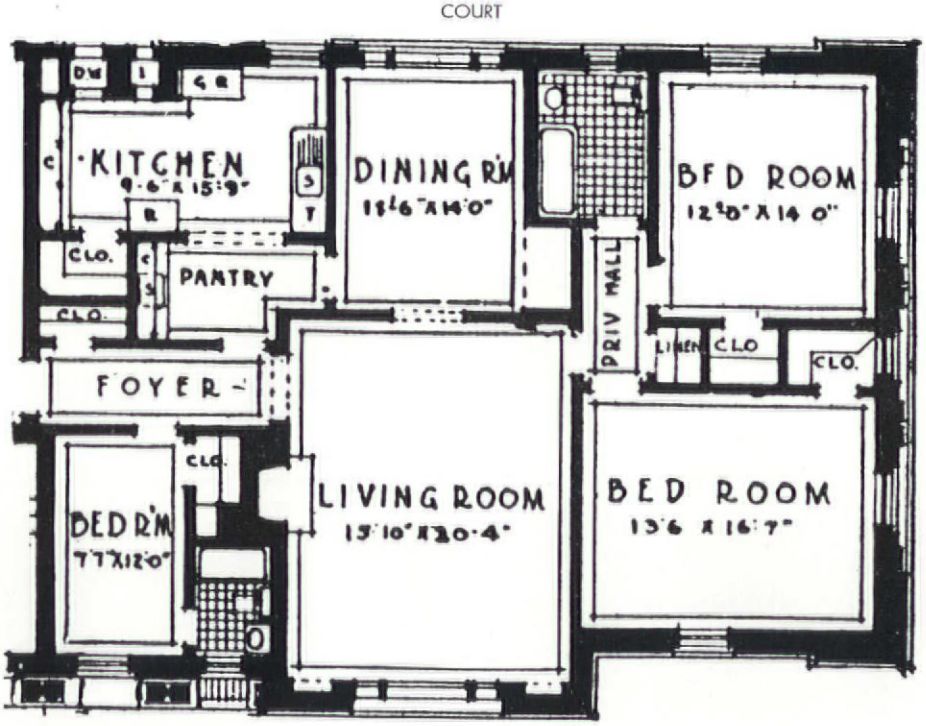
29. A 4-room suite, corner type. Emphasis has been placed upon size of living room. Bedrooms and cooking facilities are given adequate privacy.

111 HARRISON STREET, EAST ORANGE, N. J.
WARREN AND WARREN, ARCHITECTS



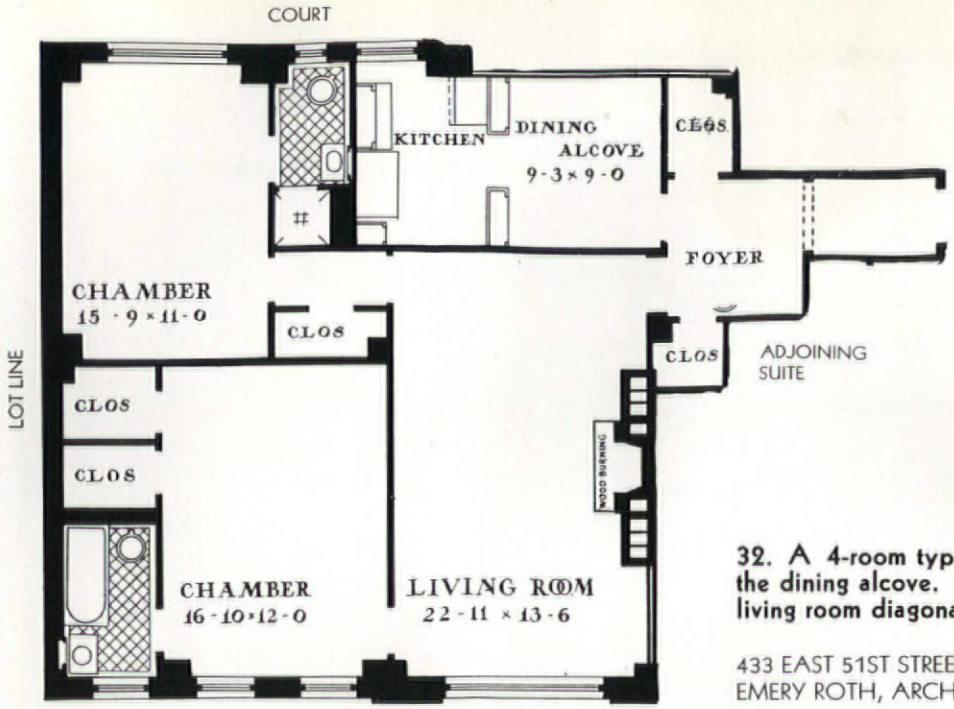
30. 5-room studio type. Entrance is by a gallery overlooking the studio, which is sunk 4 feet below the level of the rest of the apartment in order to get greater head room. The two bedrooms, each with an individual bath, are well arranged for privacy. Dining facilities are provided on the balcony overlooking the living rooms. A servant's room and bath have been added.

14 EAST 75TH STREET, NEW YORK CITY
SCHWARTZ AND GROSS, ARCHITECTS



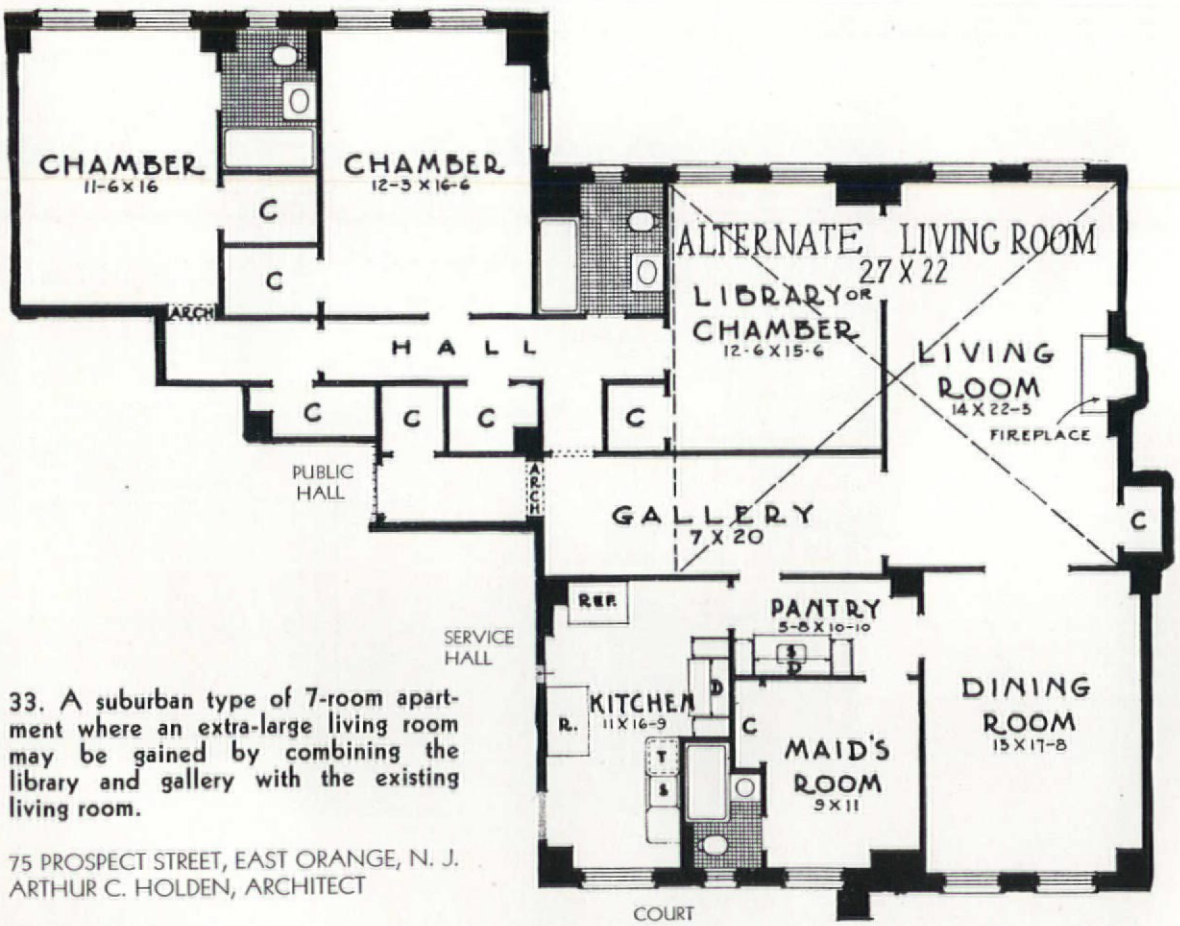
31. A well-planned 6-room apartment, where light has been provided on three sides. The servant's bedroom opening off the entrance foyer is so arranged that it may be used optionally as a third master bedroom.

BRONXVILLE, NEW YORK
PENROSE V. STOUT, ARCHITECT



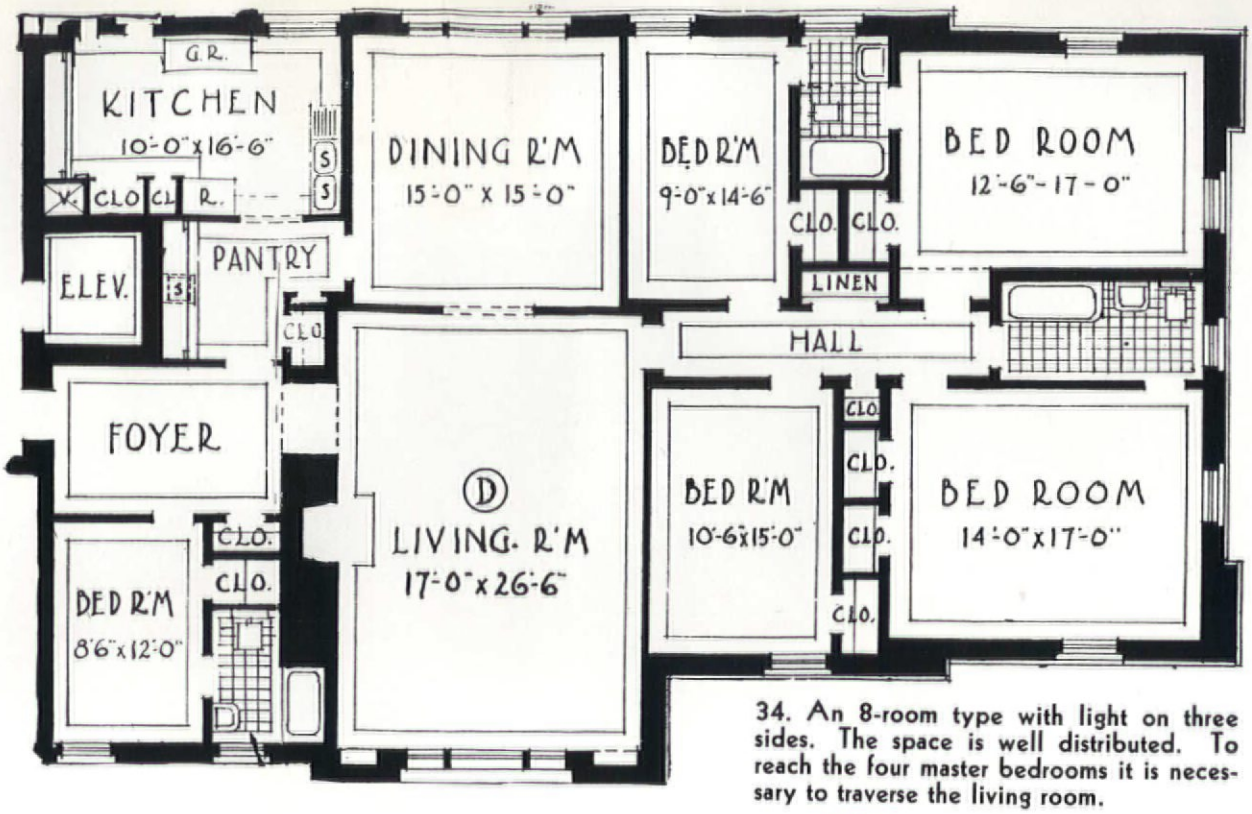
32. A 4-room type where privacy is given to the dining alcove. It is necessary to cross the living room diagonally to enter one bedroom.

433 EAST 51ST STREET, NEW YORK CITY
EMERY ROTH, ARCHITECT



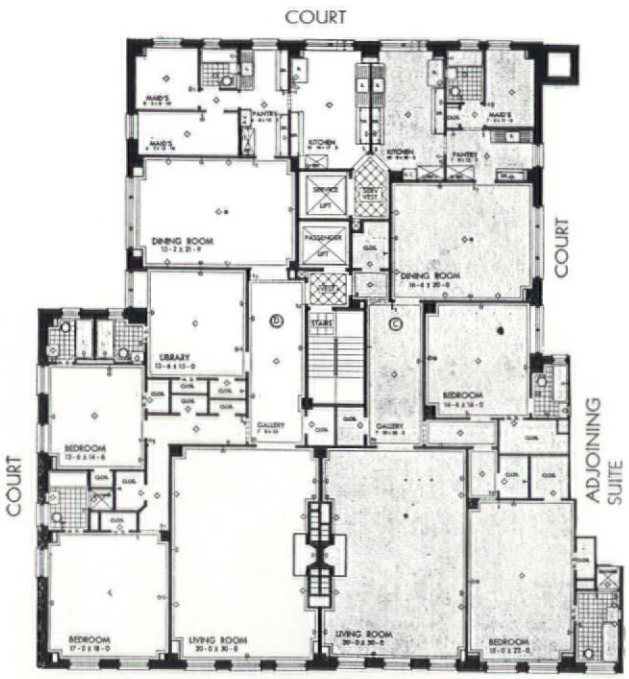
33. A suburban type of 7-room apartment where an extra-large living room may be gained by combining the library and gallery with the existing living room.

75 PROSPECT STREET, EAST ORANGE, N. J.
ARTHUR C. HOLDEN, ARCHITECT



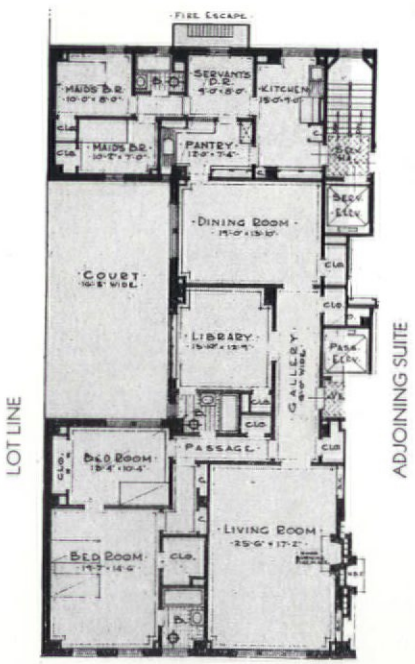
34. An 8-room type with light on three sides. The space is well distributed. To reach the four master bedrooms it is necessary to traverse the living room.

"THE GEORGIAN," BRONXVILLE, N. Y.
PENROSE V. STOUT, ARCHITECT



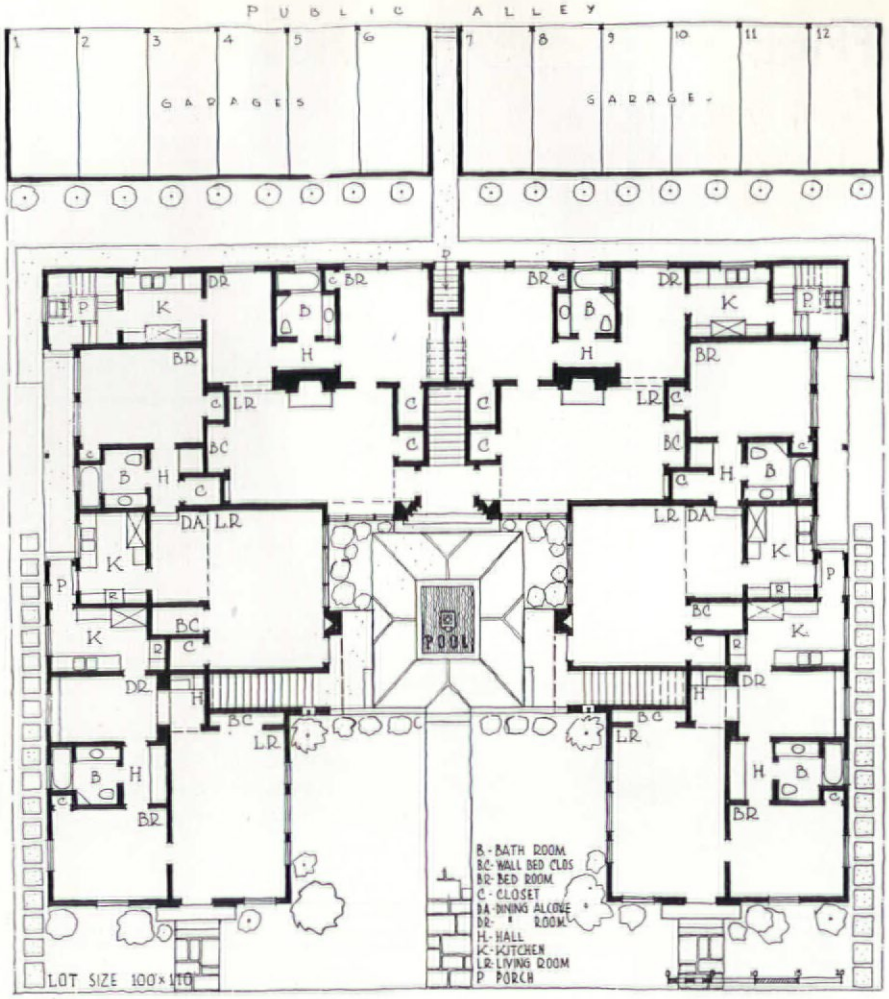
35. An 8-room type on the left and a 6-room on the right. In each the centrally located gallery is the key to the plan. Living room and dining room are located at opposite ends. Bedrooms are entered from the side of the gallery through a secondary entry.

1100 PARK AVENUE, NEW YORK CITY
DE PACE AND JUSTER, ARCHITECTS



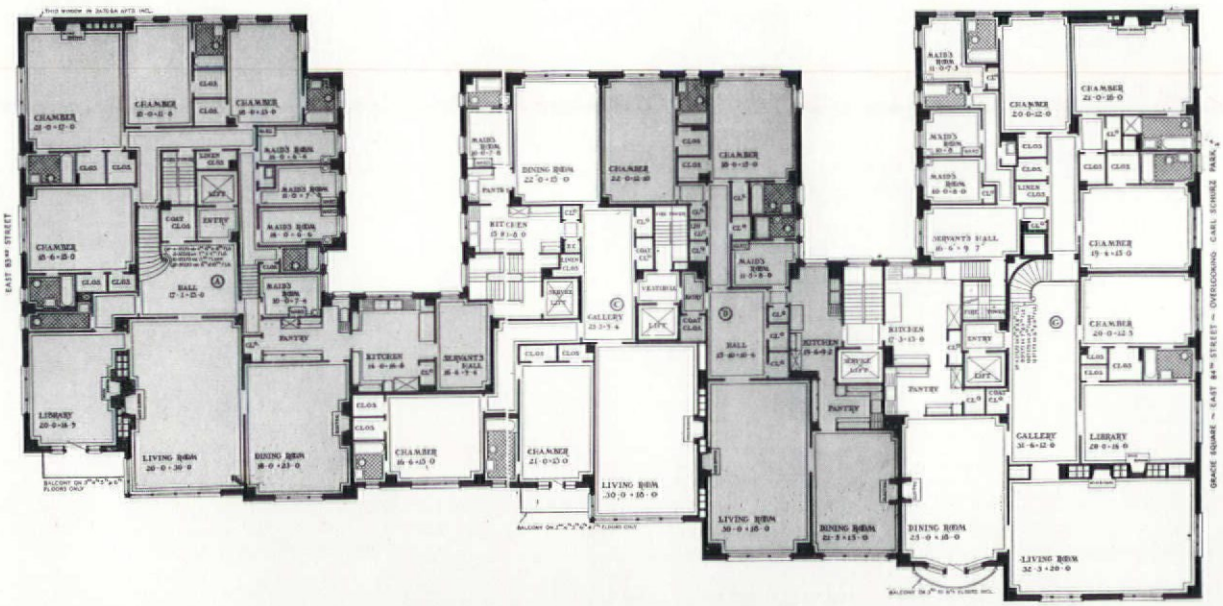
36. The lower half of this building contains two 9-room apartments on each floor. The service is forced to the rear yard, where the light is overshadowed.

117 EAST 72ND STREET, NEW YORK CITY
KENNETH M. MURCHISON, ARCHITECT



37. A California type, 2-story apartment, containing 3- and 4-room units, built round an open patio. The sides of the building come very close to the lot line.

AUDUBON APARTMENTS
LOS ANGELES
FRANZ HERDING,
CITY PLANNING ARCHITECT
GEORGE J. ADAMS,
ARCHITECT



38. A maximum number of southeast corners with balconies on the waterfront are provided. The two middle apartments have 6 rooms. The two large end apartments are duplex. The rear sections containing the sleeping rooms are raised from four to twelve steps (depending on the location) above the living and dining rooms. Greater headroom is thus provided for the latter.

10 GRACIE SQUARE, NEW YORK CITY
VAN WART AND WEIN, ARCHITECTS

OFFICE PROCEDURE, 2

By PARKER MORSE HOOPER

THE OFFICE MANUAL OF JOHN RUSSELL POPE, ARCHITECT*

WORKING HOURS

TIME RECORDS—Time records shall be filled out each night before leaving, giving to within one half hour the time spent on different jobs. For the convenience of the bookkeeping department, the time shall be put under one of the following headings and the job name stated:

Sketches
Competition drawings
Working drawings
Scale and full size details
Specifications
Supervision
General (seeing materialmen, etc.)
New business
Revising drawings and preparing supplements

OFFICE HOURS—During the months of September to May, inclusive, the office hours will be from 9 a.m. to 12:45 p.m. and from 1:45 p.m. to 5:15 p.m., except Saturdays, which shall be from 9 a.m. to 12:45 p.m. During the months of June to August, inclusive, the office hours will be from 9 a.m. to 12:45 p.m. and from 1:30 p.m. to 5:35 p.m., except on Saturday, when the office will be closed.

The following legal holidays will be observed and the office will be closed on these days:

New Year's Day, January 1
Lincoln's Birthday, February 12
Washington's Birthday, February 22
Memorial Day, May 30
Independence Day, July 4
Labor Day
Columbus Day, Oct. 12
Election Day
Thanksgiving Day
Christmas Day, Dec. 25

OVERTIME WORK—Overtime work shall be done only when authorized by the Chief Draftsman and commenced and terminated each day at such hours as stated by the Chief Draftsman. Authorization *must* be obtained each day. Payment will be made at the unit hourly base of the weekly salary. Where overtime consists of three hours or more in sequence, in the evenings, clerks will receive $1.00 and draftsmen and others $1.50 for supper money in addition to their overtime pay. Special arrangements will be made for midday meals when overtime occurs on Sundays or holidays. Place on time sheets only exact number of hours worked.

EXPENSES—Whenever trips are required outside of New York City on office business, an itemized statement of expenses made out on a trip ticket shall be given to the bookkeeping department for payment. Whenever local carfares, taxi or other small expenditures are made within New York City in the course of office business, a statement shall be made out on the Petty Cash Receipts form and given to the bookkeeping department for payment. Whenever on government work, receipts must be obtained for all expenditures.

HINTS FOR DRAFTSMEN

BATHROOM FITTINGS AND ACCESSORIES—Should always be included under cash allowances.

BATHS—General lighting to be by ceiling fixture controlled by switch at door. Mirror lighting should ordinarily be by bracket outlets on each side of mirror with pull socket or key socket control. In residence work, electric room-heating devices are frequently desirable to obviate premature operation of house heating system.

BLINDS, SHUTTERS—Ascertain requirements, allowing space to install, particularly if Venetian blinds are desired.

CLOSETS—Closet floors should be ½" higher than floor of room adjoining, with saddle flush on closet side.

CURTAIN POCKETS—Provision should be made in master's living portion of all residence buildings, and in special suites of other types of buildings.

DAMP-PROOFING—Always to be provided for all subgrade structures except where local conditions permit omission. Also under all toilet or bathroom floors, around showers, under all flat or nearly flat roof finish and on inside or outside of all walls subject to extreme weather conditions.

DOORS—Door swings must be carefully studied to avoid conflict.

In bedrooms hinge jamb should be toward bed location, in baths toward W.C. location. Closet doors to swing to admit daylight where possible.

EXITS—Arrange door swings with relation to exits for all commercial or multiple occupancy buildings.

FIREPLACES—Flue area to be not less than 1–15th of fireplace opening. No bends sharper than 45 degrees. Use Covert old-style damper and smoke

*The first half of this office manual appeared in the February issue of the RECORD, pages 177-182.

chamber. Jambs of all fireplaces to be splayed from line of facing unless otherwise directed. All flues to be lined with terra cotta pipe.

FIREPROOFING—Allow 2″ over steel in all shafts, on columns and on bottoms of girders. Allow 4″ of terra cotta for enclosing all ducts penetrating floors.

FLOOR THICKNESS—Allow a minimum of 4½″ from top of floor steel to finished floor, except where pipe and conduit layouts permit standardized decrease.

HARDWARE—Hardware should be selected at earliest practicable moment, as it affects detailing of doors, etc. Particular study must be given to holding devices for casement windows.

HEATING—In residence work heating of service portion should be arranged to permit operation independent of master's portion. Provide for concealed radiation.

HUNG OR FURRED CEILINGS—Allow at least 4″ from bottom flange of steel work to finish line of hung ceiling. Check for plumbing requirements.

KITCHENS—Provide separate hood vent as well as flue for products of combustion. Ascertain if electrical cooking devices are to be used. Make provision to prevent grease clogging waste pipes from sinks. Make provision for removal of garbage by incineration or other suitable means.

LAUNDRIES—Provide space and outlets for mechanical washing machine, mangles and electric irons, and provision for clothes drying, both indoors and out. Show vent duct for laundry dryer on construction plans.

LEVELS—All floor levels should be noted with reference to fixed datum plane, with datum bench mark located where possible.

MUNTINS—Always to be of minimum practicable section unless otherwise directed. This applies equally to all parts of wood or metal windows. Determine whether lead cames or steel muntins are desired for steel casements.

PIPING—Increased thickness of partitions to cover piping plus insulation.

PLINTHS—The use of plinths must always be given special consideration, as elimination will frequently benefit the appearance of the work where practical reasons do not exist for retention. Avoid plinths when using hollow metal, combined buck and trim.

RECEPTACLES—Should be located ordinarily about 15″ above finished floor where the plug itself can readily be reached, to avoid short circuit from pulled wires, water, etc., and where protected from damage by moving furniture.

SADDLES—No raised saddles are to be provided except where specifically instructed, and where necessary for practical reasons. Standard height of saddles where used ⅝″ above finished floor. Provide proper width for floor hinges where required.

SCREENING—Ascertain if local conditions require fly or mosquito screening, and make suitable provision for same.

SHOWERS—Valves must always be located for control without entering shower.

SOUND DEADENING—Provide special sound deadening to meet all hazards.

SPECIAL FINISH—Make clear limits of preparatory work for "Special Finish" Rooms.

SWITCHES—To be located for convenience and to be as inconspicuous as possible, generally close to trim. Do not place in trim unless specially detailed for.

TUBS—Provide for access to overflow and waste mechanism unless "Accesso" type of waste is used.

WEATHERSTRIPS—Make provision for all exterior openings in all cases.

WINDOW SILL HEIGHT—Unless otherwise directed, glass line in buildings of three stories or more should be 3′–0″ above finished floor. Mark all items to be purchased under Cash Allowances "A." Mark all other items on drawings but not to be included "N. I. C." (Not in Contract).

CHECKING LIST

In the inclusion of an item always consider and *check the relation to work of other trades involved as:*

CURB and building line levels and sidewalk grades.

FLOOR levels and column centers.

LOCATION, width and height of all openings, exterior and interior, heights of ceilings, transoms, soffits, locations of all columns, struts.

INTERIOR dimensions to be to rough construction—allow ¾″ for plaster, 2″ for marble or wood paneling, 1½″ for tile.

MATERIAL, dimensions, bond, finish, ornament and extent of all exterior finish.

STORAGE—Provide adequate receiving and shipping facilities and storage for building equipment, trunks, etc.

TOILETS, LOCKERS—Provide for building help, servants, etc.

CEILING LIGHTS—Provision to be made for easy cleaning both sides.

SIGNS, tablets, inscriptions, statues, street numbers, flashings, outside blinds or screens, storm sash, awnings, flower boxes, stone wheel guards.

THICKNESS of surface finish and depth of all returns, reveals, etc.

HEAD room under all pipes, ducts, on stairs.

GUARDS for depressions in grade levels, moving machine parts, etc.

BRICK or stone masonry joints must come at level of supporting steel.

STONE lintel and sill bearings should not be over 4″ and 2″ respectively, to avoid settlement cracks.

EXCEPT where gutters are provided, all exterior top surfaces (other than shallow sills) which would hold ice or snow must be drained and arranged to prevent ice or snow falling.

ENCLOSED RADIATORS—This item affects the following: Heating, size of radiators, sheet metal,

enclosure lining, insulation of enclosure, inlet and outlet registers, and frames.

ORNAMENTAL METAL—If enclosure is of cast or wrought metal, if register faces or frames are of special design.

CARPENTER WORK—If enclosure is of wood, trim, jambs, setting of hardware.

PAINTING—Inside of enclosure, register faces and frames, etc.

PLASTERING—Corner beads, depth of reveals.

HARDWARE—Provision for access to enclosure. Indication on small scale drawings can be limited to showing location, size and number included; the larger scale drawings to show the required construction in detail.

EXCAVATION

Areas
Catch Basins
Cesspools
Cisterns
Column Footings
Court Walls
Curbs
Elevator Pits
Existing Levels
Hydrant Pits
Material
Meter Pits
Pits—Plumbing and Heating
Porticos
Proposed Levels
Retaining Walls
Roadways
Service Lines
Sewerage
Steps
Sub-soil Drains
Survey, Plot Plan
Trenches—Piping
Tunnels
Wall Drains
Water Supply

In rock show finished net profile, including pits and trenches, column, or other foundation footings, allowing for waterproofing.

Furnish contractor with boring sheet.

Note—Top soil required.

Note—Disposal of excavated material if to be re-used adjoining structure.

FOUNDATIONS

Caisson Depth Location Size
Piling Depth Location Spacing
Sheath Piling Drive Permanent Position
Spread Depth Detail Dimension
Underpinning
Waterproofing
Boiler Plant
Step Footings to Low Level
Reinforced Slabs on Earth
Retaining Walls

WATERPROOFING AND DAMP-PROOFING

Areas
Baths, Toilets
Brushed
Cellars
Cement
Cement Mortar
Cork Insulation over Vaults
Courts
External, Walls
Flat Roofs
Foundations
Integral
Internal, Walls
Kitchen
Laundry
Membrane
Pits
Protection
Showers
Sidewalks
Tank Rooms
Tunnels
Vaults

FRAMING

Beam Brackets
Beams
Chases
Columns
Crane Supports
Ducts
Girders
Graphic Analysis of Trusses for Building Code
Grillages
Guide Supports
Hatches
Lintels
Machine Supports
Penthouse
Shafts
Skylight
Stair Landings
Struts
Tank Beams
Templates
Tie-rods
Trusses
Windbracing

MASONRY

Area Drains
Ash Drops
Ash Pit
Band Courses
Boiler Settings
Bond Stones
Book Vault Construction
Brackets
Buttresses
Cesspools
Chases
Chimneys
Chimney Caps
Cisterns
Colored Mortar Joints
Column Protection
Copings
Corbels
Corner Stone
Curbs
Driveways
Duct Enclosures
Efflorescence
Elevator Pits
Exhaust Shafts
Exterior Stucco
Fire Walls
Footing Courses
Footing Drains
Gradients
Grillage Enclosures
Ground Arches
Hollow Brick
Inserts
Insulation
Leader Drains
Lintels
Mach. Foundations
Manhole Trenches
Masonry Stairs
Meter Pit
Mullions
Panels
Parapet
Partitions
Penthouses
Piers
Pipe Shafts
Pit Drains
Quoins
Reglets
Sand Blasting
Sgraffito
Sidewalks
Sills
Skylight Curbs
Soil Drains
Sound-proofing
Steps
Sump Pits
Transoms
Tunnels
Vault Lights
Vaults
Wall Drains
Wall Finish
Wall Furring
Walls
Wall Sleeves
Waterproof Mortar
Watertable
Wire Shafts

Note—See also "Fireplaces," "Floors."

FIREPLACES

Arch Bars
Ash Drops
Dampers
Facings
Firebacks
Flue Extensions
Flues
Flue Closets
Gas Lighter
Hearths

Jacks
Linings
Mantels
Rain Check
Smoke Chamber
Spark Guard

MISCELLANEOUS IRON

Area Gratings
Bar Gratings
Bomb Screens
Carriage Hood Sockets
Chase Lintels
Checkered Steel Plates
C. I. Rad. Encls.
Coal Chute
Column Protection
Corner Stone Box
Counter Supports
Drying Racks
Fences
Fire Balconies
Fire Escapes
Flag Pole Supports
Folding Gates
Furring Lintels
Gates
Hatch Covers
Hatch Guards
Ladders
Manhole Covers and Frames
Metallic Non-slip Treads
Pipe Shaft Platforms
Protection Rails
Radiator Enclosures
Railings
Sheet Steel Doors
Slat Floors
Sump Covers and Frames
Sun Parlors
Terra Cotta Supports and Anchors
Tree Guards
Trench Covers and Frames
Vault Fronts
Vision Grating
Wheel Guards
W. I. Section Windows and Doors

Note—See also "Stairs," "Fireplaces," "Carpentry."

ORNAMENTAL IRON AND BRONZE

Balconies
Bronze Exterior
Counter Screens
Fences
Gates
Grilles
Iron Exterior
Lamp-posts
Lanterns
Marquise
Mullions
Numbers
Ornament
Railings
Register Fronts and Frames
Signs
Spandrels
Special Handrails
Special Stairs
Tablets
Terminals
Wickets

Note—See also "Stairs," "Trim."

FLOORS

Arches
Asphalt
Borders
Brick
Cement Floor
Cement Hardener
Composition
Cork
False Floors
Fill
Filling
Finished Floors
Haunches
Hearth Border
Hone Finish
Linoleum
Marble
Mastic
Mat Sinkage
Mosaic
Nailing Concrete
Non-slip
Parquet
Pipe Pockets
Polishing
Carpet Plugs
Carpet Strips
Ceramic
Cement Base
Pugging
Quarry
Rubber
Saddles
Sand Cushion
Sleepers
Smoothing Coat
Sound-proofing
Staining
Stone
Terrazzo
Tile
Trench Covers
Trenches
Underfloors
Varnishing
Waterproofing
Wood Carpet
Wood Strip
Waxing

STAIRS

Base
Brackets
Carriages
Dust Board
Easements
Exit Requirements
Face Strings
Fascias
Fireproofing
Furred Soffits
Handrails
Landings
Newels
Non-slip Treads
Partition Support
Platforms
Rails
Ramps
Risers
Treads
Wall Rails
Wall Strings
Window Guards

CARPENTRY

Acoustic Felt
Air Boxes
Barrel Skids
Bins
Caulking Windows
Chutes
Dumbwaiters
Exterior Wood Trim
Grounds
Gutter Linings
Hardware Setting
Slides
Truck Racks
Keyboards
Lockers
Pipe Chase Covers
Pocket Linings
Rough Bucks
Rough Hardware
Sash
Scuttles
Sheathing
Shelving
Sleepers
Underfloors
Weatherstrips
Window Frames

Note—See also "Floors," "Trim."

TRIM

DOORS:

Access
Closet
Dumbwaiter
Elevator
Exit
Fire
Flap
Folding
Folding Partitions
Hand-hole
Revolving
Rolling
Rolling Shutters
Secret
Shaft
Sliding
Smoke Check
Sound-proof
Swinging
Toilet Compartment

Architraves
Base
Beam Casing
Beam Ceiling
Bookcases
Borrowed Lights
Bulletin Board
Carving
Cedar Closets
Ceiling Lights
Chair Rails
Closet Fittings
Columns
Counters

Cupboards
Curtain Pockets
Decks
Directory
Door Frames
Drain Boards
Dressers
Frame Casings
Furniture
Handrails
Hat Racks
Inside Shutters
Jambs
Linen Room
Mail Racks
Mantels
Medicine Closets
Mirrors
Paneling
Panel Racks
Peg Board
Picture Molding
Pilasters
Plinths
Radiator Enclosures
Saddles
Screens
Show Windows
Telephone Booths
Transoms
Umbrella Racks
Urinal Partitions
Venetian Blind Pockets
W. C. Partitions
Wainscot
Wall Molds
Window Architraves
Wire Molding
Wood and Glass Partition
Woodboxes

Note—See also "Stairs," "Floors," "Carpentry."

ROOFING AND SHEET METAL

Box Gutters
Bulkheads
Crestings
Dormers
Drainage
Eaves
Ext. Sheet Metal
Finials
Flashing Adjoining Buildings
Flashing Flag Poles
Flashing Rail Uprights
Flashings
Gutter Screens
Hips
Hung Gutters
Leader Heads
Leaders
Louvers
Material
Ridges
Scuppers
Scuttles
Skylights
Skylight Screens
Snow Guards
Valleys
Ventilators
Wind Vane

GLAZING

Baffle Screens
Bookcases
Borrowed Lights
Cabinets
Ceiling Lights
Deal Plates
Desk Tops
Doors
Double Glazing
Dresser Fronts
Enclosures
Medicine Closets
Mirror
Partitions
Peepholes
Screens
Shelves
Shower Enclosures
Show Windows
Sidelights
Skylights
Toilet
Transoms
Windows

MARBLE

Safes
Showers
Splash Boards
Stools
Urinal Partitions
W. C. Partitions

Note—See applicable items under "Masonry," "Floors," "Fireplaces," "Stairs," "Trim."

MOSAIC, TERRAZZO

Borders
Floors
Inserts
Pattern
Wall Panels

STRUCTURAL GLASS

Architraves
Base
Border
Counter Tops
Refrigerator Lining
Saddles
Shelves
Table Tops
Urinal Partitions
Wall Panels
W. C. Partitions

TILE, CERAMIC

Base
Border
Built-in Accessories
Floors
Splash Boards
Wainscots

KALAMEIN, HOLLOW STEEL

See applicable items under "Trim" and "Rough Carpentry," particularly doors, windows, frames, partitions, show windows, fire doors. Exterior to be copper Kalamein.

HEATING

Air Compressor
Air Supply Ducts
Air Washers
Ash Removal
Baffle Plates
Blow-off Tank
Boiler
Boiler Flue
Boiler Pit
Boiler Room
Boiler Room Exhaust
Boiler Room Exit
Ceiling Insulation
Cleanout
Coal Chute
Discharge Caps
Economizers
Exhaust Fans
Expansion Loops
Filter Chamber
Fire Dampers
Fire Louvers
Fireproof Const.
Fresh Air Intake
Fuel Conveyor
Fuel Storage
Fume Closets
Hand-holes
Heating Branches
Heating Mains
Humidifiers
Hung Radiators
Intake Drain
Intake Insulation
Intake Screens
Louvers
Non-conducting
Pipe Chases
Pipe Pockets
Radiator Enclosures
Radiators
Register Faces
Registers
Return Pumps
Reversing Device
Rolling Shutters
Skylights
Smoke Breeching
Snow Melting
Steam Jets
Thermostat Motor
Thermostats
Trap Pockets
Valve Control
Ventilation Ducts
Ventilation Motor
Water Supply

REFRIGERATION

Air Cooling
Brine Cooler
Circulating Pumps
Condenser
Crusher
Cuber
Drainage
Drinking Water Cooler

Exit
Filter
Fire Dept. Connection
Gas Machines
Ice Handling
Insulation
Machine
Mains
Pilot Lights
Pipe Chases
Power Supply
Protection of Moving Parts
Refrigerators
Storage
Valve Control
Ventilating
Water Supply

PLUMBING (Plumbing and Drainage Permits)

Automatic Starter
Back Water Valve
Bathroom Fitting
Boiler Blow-off
Broiler
Clothes Washer
Curtain Rods
Distribution
Drinking Water Filter
Drinking Water Fountains
Drip Pan
Dryer
Ejector and Compressor
Ejector Vent Line
Emergency Lighting
Filter
Fire Hose and Racks
Fire Lines
Fire Pump
Fixtures
Floor Drains
Fresh Air Intake
Gas Heaters
Gas Mains
Gas Meter
Glass Holders
Gravity Soap Supply
Grease Traps
Hood
Hot Water Heater
Hot Water Tank
House Pump
House Tank
House Trap
Incinerator
Kitchen Sink
Laundry Stove
Lavatories
Leader Conns.
Leader Drains
Mangle
Marquise Drains
Medicine Cabinets
Pantry Sinks
Paper Holders
Permits
Pipe Shaft
Power Supply
Pressure Valves
Range
Reducing Valves
Refrigerator Drains
Refrigerator Sinks
Sadirons
Sewage Disposal
Sewer
Shelves
Shower Controls
Shower Curtains
Showers
Siamese
Sill Cocks
Siphons
Slop Sinks
Smoke Pipe
Soil Line
Sprinklers, Tank
Sterilizer
Street Hydrants
Suction Tank
Sump Cover
Sump Pump
Tank Ladder
Tank Signal
Trap Pit Cover
Towel Bars
Trenches
Tub Grips
Tubs
Urinals
Valve Control
Vent
Vent Line
Warming Closet
Wash Trays
Waste Line
Water Closets
Water Motors
Water Piping
Water Softener
Water Supply Meter

PNEUMATIC

Carriers
Compressor
Piping
Receiving Stations
Sending Stations
Storage Tank

VACUUM CLEANING

Control
Disposal
Exhaust
Hose
Machine
Mains
Outlets
Power Supply
Tool Closets
Tools

ELECTRICAL

Annunciators
Bath Cabinets
Book Vault Protection
Burglar Alarm
Cable Support Boxes
Call Bells
Conduits
Counter Screen Reflectors
Current Supply
Dictagraph
Direct Lighting
Director Shelf
Electric Clocks
Electric Cooking
Electric Heating
Engine
Entrance Bells
Exchange
Ext. Lanterns
Fan Outlets
Fire Alarms
Fixture Supports
Floor Lighting
Generators
Indirect Lighting
Junction Boxes
Lamp Posts
Lighting Outlets
Lightning Rods
Mangle
Meters
Motors
Panel Box Fronts
Panels
Plate Warmers
Power Outlets
Receptacles
Sadirons
Service Switch
Show Window Lighting
Signs
Sterilizer
Storage Batteries
Switchboard
Switch Control
Tank Signals
Telautographs
Telegraph
Telephone Booths
Telephone Chases
Telephone Panels
Telephones
Ticker
Time Stamps
Transformer Room
Wall Sleeves
Washer
Watchmen's Signals
Wire Chases
Wireless
Wire Molds
Wiring

ELEVATOR INFORMATION

Annunciator Finish
Automatic Reset
Base
Bumpers
Bumper Supports
Cab Gates
Cab Roof Platform
Cab Size
Cab Step Lighting
Call-back
Combination Gate and Door Operator
Controller Location
Counterweight Screens
Crane for Handling Parts of Machines
Current Supply
Design
Dials
Door Closing Device and Support
Emergency Exit
Enclosure Doors
Fan Outlet
Finish of Shaft, Walls, Side and Rear
Fire Dept. Service
Flash Light Annunciator
Floor
Floor Gratings on Arch
Floor Landing Emergency Lock
Floor Numbers
Floor Numbers Elev. Hall Walls
Front at Floor Thicknesses
Gate Contact
Gate Hangers
Gate Operator
Glazing
Governor Location

Guide Lubricators
Guide Supports
Handrail
Hangers—Dust Cover
Hatch in Floor of Mach. Room
Head Room above Top Landing
Horsepower
Inspection Certificate Frame
Interlock Operator
Interlocks
Lanterns
Lighting Fixtures
Lock Drop Annunciators
Machine Room
Machine Room Exhaust
Machine Room Sound-proofing
Machine Room Support
Max. Cap., lbs.
Mirrors
Night Service
Non-slip Paving at Openings
Normal Cap., lbs.
Operator's Flash Lamp
Panel Location
Pit Depth Below Lowest Landing
Pit Drainage
Power Supply
Push Button Plate Design
Roping Room
Saddles
Safe Lift Cap., at Low Speed
Shaft and Pit Lighting
Shaft Access Doors
Sheave Beams
Sheave Grating or Arch
Signal Machine Location
Signals
Signal Transfer
Skylight Over Shaft
Slow-down Indication
Speed per Min.—Max. Load
Speed per Min.—Normal Load
Starter's Plate Design
Starter's Signal
Sunday Service
Telephone In Cab
Total Rise
Total Stops
Type of Machine
Ventilation Registers

DRAFTING ROOM

NOTES

Both large and small Consultation Rooms, opening off of Main Lobby should be reserved for appointments and emergency needs of the Administrative Staff. On such occasions when the Contractor's Room is occupied permission should be obtained from the front office before occupying either of the rooms.

Whenever on a building of public assembly we equip all exterior doors with "panic bolts" let us equip at least one door with the proper hardware so that it may be opened from the exterior. On a building as large as the new Constitution Hall we should have provided such a door-operating device on each one of the three streets.

Provide on every job one or more steam hose connections for the purpose of making available to an Owner an efficient and rapid method of snow and ice removal. Such a connection to be one inch. Should be located as near window as run of steam main will permit.

GENERAL CONTRACTORS

We have recently had a demonstration of the fact that it is very poor office policy for the Architect to deal directly with the Subcontractor. Frequently, in order to expedite work, it seems unavoidable that direct contact be made with a representative of the Subcontractor in order to settle points of detail, but such action should always be safeguarded by letters to the General Contractor and if possible a representative of the General Contractor should be present in all cases. All correspondence should be directed to the General Contractor. When the element of time limit in an emergency requires immediate information in the Subcontractor's hands the correspondence should still be addressed to the General Contractor and a copy forwarded to the Subcontractor simultaneously.

QUOTATION OF ESTIMATES

Attention of Job Captains is called to the requirement that the transmission of estimates to clients, either preliminary, general or for small items of the work, should be handled through the front office.

OFFICE HOURS

Periodically the observance of the office hours becomes lax and when once started seems to have an accumulative effect on the entire force with a few exceptions. It is desired that each member of the organization be his own mentor in this regard. It has never been the principle of the office to produce a factory-like regimentation in regard to the element of time. However, there is something very akin to taking money out of the till when freedom is carried to excess. The willingness to make up time that is lost due to tardiness does not compensate.

SPECIFICATION DEPARTMENT

SPECIFICATIONS

In the future we desire to use T.M.C. lock strip without alternate. Likewise, where any other material is proven to have given exceptional service we may specify it by trade name without an alternate.

JOB CAPTAINS

CORRESPONDENCE

The original copy of incoming letters is not to be held in the drafting room more than twenty-four hours. Notes should be made covering any points required and these notes should be kept in the job record as a permanent part of the information. In case a letter is too long to transcribe by longhand it may be copied in the outer office.

FILING

One man from the filing department has been assigned to each floor and his services should be used to economize the amount of time spent in handling drawings. In securing drawings from the files there are no rules against a man making a short cut by getting the drawing for himself, but if the drawing is found to be missing from its proper folder then the file clerk should be called to locate it. Likewise the file clerk has instructions to return to the cabinets at suitable intervals all drawings not in use.

SAMPLES

When requesting samples of terrazzo, limestone, sandstone, bluestone and soapstone they should be 6″x10½″ from ¾″ to 1″ in thickness. Granite samples to be 12″x12″ 2″ thick with tooled edges.

PHOTOSTATS

1. The cost of a photostat is based, in most cases, not on the size of the enlargement, but on the size of the paper on which it is printed.
2. If a photostat comes back with an attractive white border, and this border is not required, we may be paying just as much for the border as for the enlargement itself.

In order to avoid this waste, please state if a border is wanted, and for further economy try to state exactly on what size paper the photostat should be printed.

The stock sizes of the print paper, and the respective costs are:

8½ x 11	$ .25
11 x 14	.35
14 x 18	.50
18 x 22	1.00

In making a photostat it is first necessary to make a negative, so to the cost of the positive must be added the cost of one negative. The negative, however, is generally printed on paper of smaller size than the positive.

Another process of enlarging is the "Solar Print."

While the chief advantage of the "Solar Print" is the large size of paper on which it can be made, it will be seen that the 20″ x 24″ size is more than 40% cheaper than an 18″ x 22″ photostat.

The sizes in inches and prices of "Solar Prints" are:

16 x 20	$ .35
20 x 24	.60
25 x 30	1.00
30 x 40	1.50
40 x 50	2.25
40 x 60	3.25
40 x 70	3.75
40 x 80	4.25

The "Solar Print" negative is made on a 5″ x 7″ glass, and will be preserved for an additional twenty-five cents.

MONUMENTAL STAIRWAYS

This is one item on all jobs that invariably entails a claim for extra on the part of the contractor. When final details were prepared on the Junior League, Spence School, D.A.R., and Congregational Church our final designs were the basis of such a claim. It is highly desirable to study all monumental stairways and determine all actual points, both as to construction and esthetic design, before the issuance of contract drawings. A specification writer cannot actually picture the development that will take place sixty days after the contract is awarded. The following points need to be definitely determined:

Pattern of wrought iron or bronze work and method of anchoring to stair construction. Thickness of stone or precast terrazzo treads should not be less than 1¾″, and frequently a 2″ thickness is required. Thickness of wall strings and face strings must be explicitly noted and the number of members, if more than one, and all molded sections indicated. Any curve work at the stair or landing levels should be indicated and definitely noted as to whether this must be a part of the landing slab or detailed as a separate piece. If lack of time or other reasons prevent the proper study of the details, a Cash Allowance sufficient to cover the ornamental portions of the stair, should be used. Cast railings should not be used on light wrought iron as the problem of anchoring becomes very difficult. On exterior stairs or approaches, cover all details regarding the letting of steps into stone cheeks and the waterproofing by membrane method where the steps are carried over excavated parts of the building.

LAUNDRY DESIGN

1. Amount of floor space ultimately required for laundry plant.
2. Comparative rental value, and desirability for other functions, of floor space in different parts of building.
3. Cost and convenience of conveying to the proposed location adequate supplies for both hot and cold water.
4. Cost and difficulty of installing steam piping to and from boiler.
5. Problem of providing suitable drainage system.
6. Ease of delivery of soiled linen from all collection points to the laundry, and of finished work to storage rooms.
7. Possibility of damage to expensively furnished space from leaks in steam or water piping and in drains.
8. Weight and live load figures of equipment to be installed, especially if upper floor locations are contemplated.
9. Cost and coordination with other hotel departments of arranging for necessary and ample ventilation.
10. Location of means for properly disposing of lint exhaust, absolutely necessary to avoid nuisance and fire risk.
11. Clearances and means for moving large units of machinery without excessive cost or risk of damage.
12. Probability and prevention of drift of dust and dirt into plant.
13. Convenient service entrances for employees, and availability of adjacent space for employees' rest facilities.
14. Choice of materials handling methods and their influence on floor space assignment.

15. Effect on laundry location of any plans for future growth of hotel.

(a) For hospitals, while the average area of 10 square feet per bed should provide adequately for immediate needs, a more judicious estimate would allow 12 square feet per bed. This latter figure gives ample opportunity for expansion or the installation of additional equipment as demand dictates.

(b) Hotel laundry plant floor space can be economically estimated on the basis of 15 square feet per bed. This method of calculating gives necessary consideration to the requirements of dining halls and banquet rooms. If the hotel is to operate a guest laundry service, a commensurate increase in plant area will be needed.

TIME RECORDS

Time records are to be kept daily and according to the following abbreviations:

P.D.	(Pencil Drawing)
I. Tr.	(Ink Tracing)
Supp. No.	(Supplement No.)
Chk. Shop Dwgs.	(Check Shop Drawings)
Sch.	(Schedules)
Per. R.	(Perspective Rendering)
Gen.	(General) Job Captains Only
Conf. Contr.	(Conference Contractor)
Conf. Owner	(Conference Owner)
Conf. B. M.	(Conference Building Material)

All sketches—whether plans, elevations or perspectives—to be submitted to client, shall be given sketch numbers.

Rough sketches to be later assembled for finished drawings shall be noted under the drawing number.

All sketch and drawing numbers must be secured upon the commencement of the work. If this is impractical under the job conditions, assign a temporary indication A, B, C, etc., for the purpose of the time record, later transferring to the permanent drawing number. Advise the chief draftsman of any proposed absences from the office, and where absences are unexpected, a message should be telephoned to the office explaining same.

OUTSIDE WORK

(In the case of service lines these are usually brought to within 10'-0" of building by Contractor for "Outside Work." At this point, Contractor for the building makes connection for and carries service lines into the building).

SURVEYS	To indicate Roads, Contours and Trees; Gas, Electric, Water and Sewer lines.
SOIL:	Earth (type). Rock (type). Sub-surface Water (springs or tide water). Quicksand.
GAS:	Public or Private Co. Service. Natural or Artificial.
ELECTRIC:	Public or Private Co. Service or Owner's Plant. Alternating or Direct Current—voltage. Underground or Overhead. Transformer Room.
TELEPHONES:	Public or Private Co. Service Underground. Intercommunicating to various units and in each unit.
SEWAGE:	Public or Private Sewer—size, location, level. Sewage Disposal Plant. Storm Water Drains.
WATER:	Public or Private Co.—pressure. Private Wells—flowing or pumps. Private Tanks—elevated or underground. Filters and Softeners. Fire Hydrants and Lines. Lawn Sprinklers. Fountains or Swimming Pools. Sprinkler Systems for Fire Protection.
ROADS:	Telford or Concrete Base Catch Basin. Concrete, Gravel, Bluestone or Asphalt Topping. Bridle Paths. Fire Stop Lanes through Wooded Areas. Docks and Landings. Tennis Courts. Road Lights, Fire Court, Service Yard, Drying yard.
WALLS:	Retaining Walls or Terraces. Entrance Gates — bell push at gates; where to ring. Fences.
OUTBUILDINGS:	Gate Lodge, Stable, Garage, Greenhouses; Power or Pump. Paddocks, Kennels or Gamekeeper; Bath Houses; Indoor Tennis Courts or Swimming Pools. Farm Building—docks or yacht landings. Central Heating Plant for all Buildings or Separate Plant in each Unit.
GARDENS:	Vegetable or Flower Gardens; Rock or Water Gardens; Terraces, Planting, Sod or Grass Seeds.
SCREENS:	Insect Screens of Metal or Wood—stationary,* sliding,* hinged or roll-up.
BLINDS:	Wood Shutters; Venetian Blinds—inside or outside.

*Materials recommended.

AWNINGS:

WEATHERSTRIPS:
Metal.*

STORM SASH:

HARDWARE: Master Key System.

ALARM SYSTEMS:
Burglar or Fire; Watchman Clock System.

INSIDE WORK

HEATING:
Outside Steam Lines brought to building.
Coal: If gas or oil, to have automatic control (supply or storage tanks).
Steam, Hot Water, Vapor Vacuum or Hot Air.
Direct or Indirect System.
Radiators Exposed or Concealed.
Thermostatic Heat Controls,* Humidifier, Insulation of Walls and Roofs.

PLUMBING:
Galv. Iron or Brass Pipe* for H & C water lines.
Water Filters and Softeners.
Hot Water Heaters and Tanks (coal, oil or gas fired).
Ice Making or Refrigerating Machines.
Refrigerators—iced or refrig. system.
Ice Water Supply.
Fire Lines and Hose Racks.
Sprinkler Systems.
Garden Hose Connections.
Water and Gas Meters.
Flush Valves or Tanks on W.C.
Hot and Cold Water in Masters' and Servants' Wings, piped and controlled separately.
Grease Traps.
Showers, Laundry.

INCINERATOR: Central Incinerator on property or separate installation at each unit.
Coal, Gas or Oil, fired.

MACHINERY: Elevators, Dumbwaiters, Trunk Lifts.
Electric or Hand Power.
Refrigerating and Ice Cream Machines (Electric).
Ventilating Systems (Electric).

ELECTRIC: Light and Power Lines (Vacuum Cleaners).
Dumbwaiters and Lifts (portable or central).
Laundry Machinery, Kitchen and Pantry equipment.
Refrigerating Machines.
Ventilating Fan Motors.
Remote Control or Emergency.
Electric Clocks.

LIGHTING FIXTURES:
Base Plugs, Wall and Ceiling Outlets.
Night Lights.
Plug Outlets for Extensive Lighting of Terrace or Grounds (garden parties, etc.).
Closet Lights. General Control of Base Plugs, one Switch.

CALL BELLS AND ANNUNCIATORS:
Door Bells.
Call Bell System for Maid, Valet, Butler, Housekeeper, Governess, Laundress, Visiting Servants.

ALARMS: Burglar, Fire, or Watchman Clock System.

SOUND-PROOFING:
Acoustic treatment of Ceilings.
Acoustic treatment of Pantry.
Soundproofing of Walls, Floor and Ceiling of Bathrooms and Maids' Closets in Master Portion.
Communicating Room and Doors.

STORAGE ROOMS:
Coal, Wood, Furniture and Mineral Water.
Trunk Rooms with racks.
Cedar Rooms for rugs and furs.

VAULTS: Silver and jewel.

RECEIVING AND UNPACKING ROOM:

CLOTHES CHUTE:
Metal or glass lined and ventilated.

RANGES: Coal, Gas or Electric.

PLATE-WARMERS:
Gas or Electric.

TOWEL DRYER:
Gas or Electric.

LAUNDRY DRYER, BOILER, AND STARCH COOKERS:
Coal, Gas or Electric.

LAUNDRY MACHINERY: Electric.

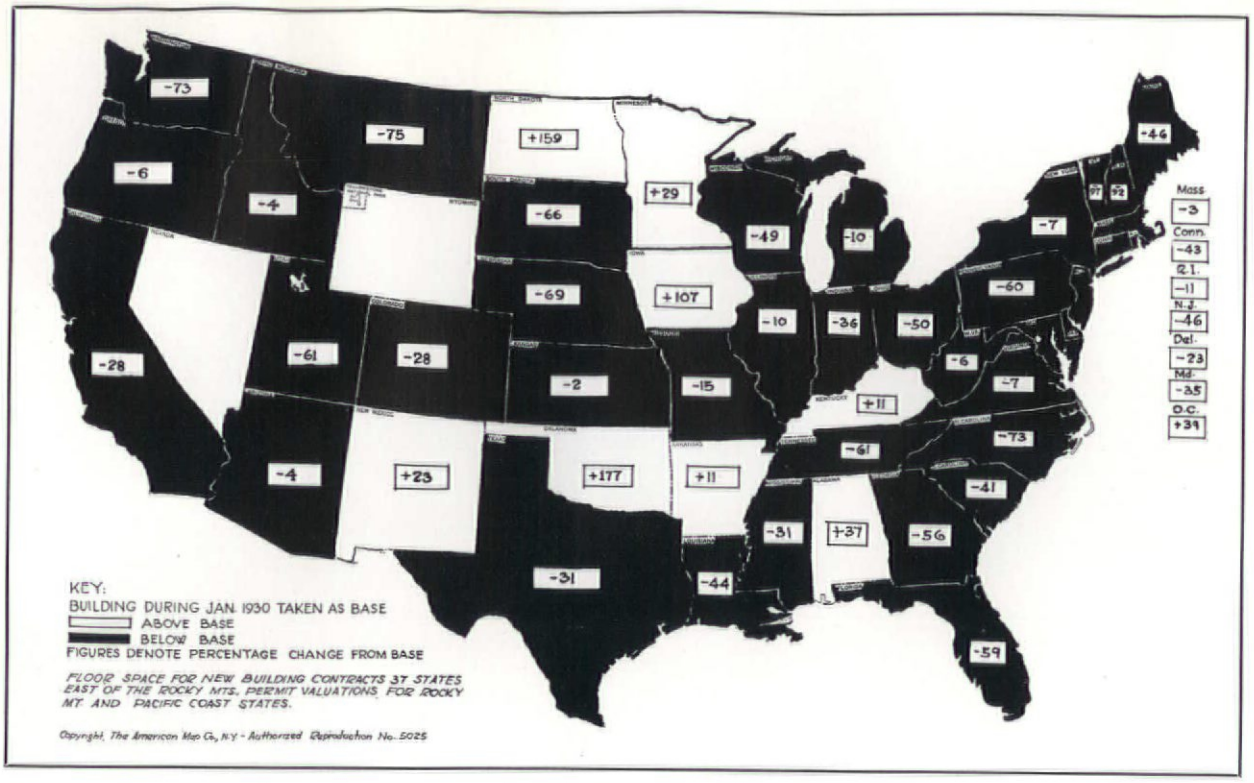
BATHROOM ACCESSORIES: Medicine Cabinets (wood or metal). Towel and Grab Bars. Soap Dishes, Paper Holders (china or metal).
Built in or applied.

* Materials recommended.

ROOMS	FLOORS	WALLS	EQUIPMENT
Laundry (separate laundry for servants)	Cement	Plaster (enamel or paint)	Tubs (porcelain or vitreous ware).
	Tile* (vitreous)	Tile (glazed)*	Dryers (gas, electric or coal with vent flue).
			Ironing Machines (electric).
	Rubber	Tile (mat-glazed)	Starch Cooker (coal or elec.).
	Linoleum	Vitrolite*	Boiler (coal or elec.).
			Ironing Tables (elec. outlets).
			Washing Machines (elec.).
			Clothes Chute.
			Store Closets.
Kitchen (Scullery, Veg. Storage, General Storage, Pastry Room)	Wood	Plaster	Ranges (coal, gas or elec.).
	Cement	Enamel	Plate Warmer (gas or elec.).
	Vitreous Tile	Oil Paint	Sinks (porcelain or vitreous ware).
	Rubber Tile*	Glazed Tile*	Dishwasher
	Linoleum*	Vitrolite*	Refrigerators (meat and fish).
			Cook's Machine (elec.).
			Dressers (wood or enamel), (iron), rubber or linoleum covered counters.
			Ventilating (vents flues or fan).
			Incinerator.
Preparation Room	Wood	Plaster	Galvanized, Enamelled Iron or Vitreous Sink.
	Cement	Enamel	
	Vitreous Tile	Oil Paint	Ice Cream Machine—storage.
	Rubber Tile*	Glazed Tile*	Refrigeration.
	Linoleum*	Vitrolite*	
Pantry	Wood	Plaster	Plate Warmer.
	Cement	Enamel	Towel Dryer (elec. or gas).
	Vitreous Tile	Oil Paint	
	Rubber Tile*	Glazed Tile*	
	Linoleum*	Vitrolite*	
Store Room			Silver Vault.
			Silver Cleaning Room (buffing machine).
China Room			Sink (metal with wood or linoleum-covered drainboards, copper or white metal).
			Acoustic Treatment.
Servants' Corridors, etc.	Wood*	Plaster (painted)	
	Cement	Tile (glazed vitrolite)	
	Rubber		
	Linoleum*		
Servants' Bedrooms	Wood*	Plaster (painted)	Separate Wash Basin in each room.
	Cement		Metal Cabinets or Closets.
	Linoleum*		
Servants' Baths	Tile (vitreous*)	Tile (glazed*)	Tub, W. C. and Showers for Men Servants.
	Cement	Vitrolite	
		Hard Plaster	
Boot Rooms	Cement or Tile	Cement or Tile	Sink and Cupboards.
Servants' Trunk Rooms	Cement*	Cement*	Metal or Wood Racks*.
Servants' Sitting Room	Wood*	Plaster	Chair Rail.
	Linoleum*	Oil Paint	
	Rubber		
Servants' Dining Room	Wood*	Plaster	Sink and China Closets.
	Linoleum*	Oil Paint	Chair Rail.
	Rubber		
Fireplace Wood Storage	Cement*	Cement*	Metal Racks*.

* Materials recommended.

ROOMS	FLOORS	WALLS	EQUIPMENT
Flower Room	Tile (vitreous) Rubber Linoleum	Plaster Enamel Paint Tile Vitrolite	Sink Dressers
Maids' Workroom	Wood Linoleum Rubber	Plaster Oil Paint	Sink—cupboards.
Valet's Workroom	Wood Linoleum Rubber	Plaster Oil Paint	Sink—cupboards. Metal Hanging Rods
Linen Room	Wood Linoleum Rubber	Plaster Oil Paint Enamel	Cupboards (wood or glass shelves). Outlet for Elec. Irons.
Visiting Servants' Rooms	Same as servants' bedrooms.		
Governess'	Same as servants' bedrooms.		
Children's Rooms	Wood Floors	Plaster Oil Paint	Fireplaces. Call Bell Buttons.
Children's Baths	Same as master's baths.		
Master's Baths	Vitreous Tile Rubber Cork Linoleum Wood	Enamel Paint Mat-Glazed Tile Glazed Tile Vitrolite Marble	Fixtures—enameled iron or porcelain. Marble lavatory slabs. Showers—glass enclosure. Sitz Bath. Electric Cabinet. Accessories—china or metal, built in or applied. Doors—full length mirrors. Electric Power Outlets. Electric Call Bell Buttons. Flush Valve Toilets or Tank. Venetian Blinds Intercommunicating Doors (soundproof). Call Bell Buttons. Alarm Bell Buttons. Telephones. Lighting Fixtures, Plugs, Bracket and Ceiling. Closet Lights.
Master's Bedrooms, Master's Sitting Room on Bedroom Floor, Private Dressing Rooms, Boudoirs, Sleeping Porches, Guest Bedrooms, Separate Bachelor Rooms			
Gun Room, Men's Reception Room and Lockers, Ladies' Reception Room, Coat Rooms, Breakfast Room, Fireplaces, Fireplace Facings, Fireplace Hearths			Dining Room Library. Living Room. Card Room.



The January building map showed eight states east of the Rockies where new contracts were in larger volume than in January 1930; at the same time three additional western states, based upon incomplete permit data, showed higher dollar totals than were recorded a year ago.

BUILDING TRENDS AND OUTLOOK

PROSPECTS FOR APARTMENT HOUSE BUILDING

Apartment house construction, whether it be for the middle classes or for the wealthy, has been activated in the last analysis by economic considerations. Urban growth has brought with it a scarcity of desirable land. This has reflected itself in ever-rising land values. Rising land values have made larger gross rentals necessary if a relatively constant yield upon original and accrued investment in realty were to be maintained. Business has stolen a march on residential areas, and in this development the fashionable residential districts, where single-family dwellings were the order, have been crowded out. Little wonder that vertical growth, made possible by improved technical design, should have taken seed under such circumstances.

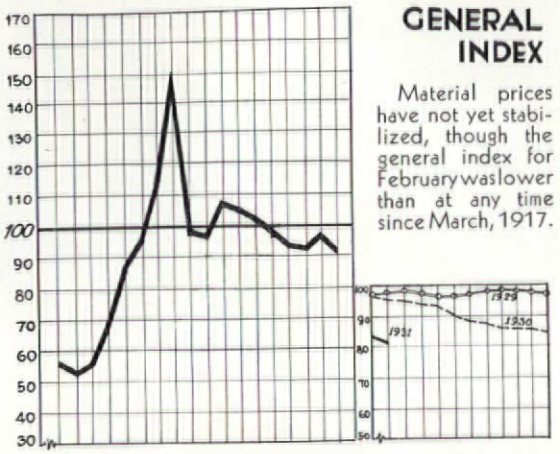
Apartment house development has not been confined to the city. Many of our smaller towns and suburban areas have seen rapid growth in this dwelling type. The apartment house has taken root in these areas despite the fact that there is not the same sort of land scarcity, and that land values there are usually much lower than in our large cities. The question then appears as more deep-seated than that of landlord economics. It is fully as much a question of tenant-economics. Freedom from the ordinary cares of housekeeping is the most important persuasion to the prospective tenant. There can be no denying that for the renter the apartment house offers economies that have not yet been completely translated into the small dwelling. These economies have afforded the principal appeal to tenants.

From the point of view of contract values new apartment house building reached its largest expansion in recent years early in the summer of 1926. This expansion was naturally spurred by the Florida boom, which culminated at that time. From mid-year 1926 to the end of 1927, a period of about one and a half years, apartment house construction, though hesitating, was distinctly on the downgrade. This trend was temporarily arrested by the upturn in 1928 that lasted for eight months but which failed to attain the previous high level. Since August of that year the declining trend was resumed and fell to a level in January, 1931, lower than at any time since the beginning of comparable data in 1925.

(Continued on page 90, advertising section)

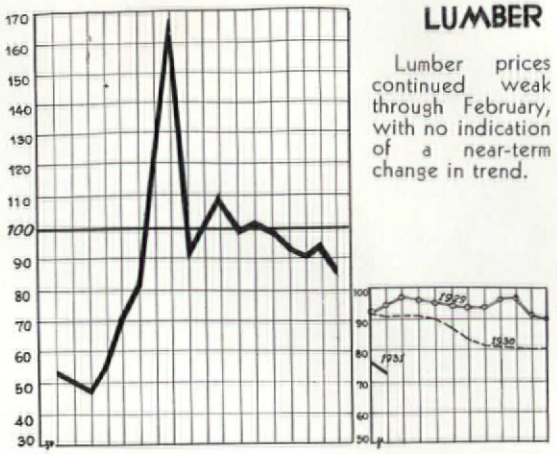
WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average = 100



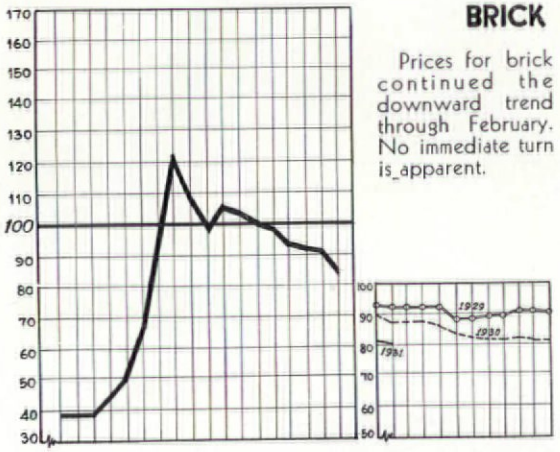
GENERAL INDEX

Material prices have not yet stabilized, though the general index for February was lower than at any time since March, 1917.



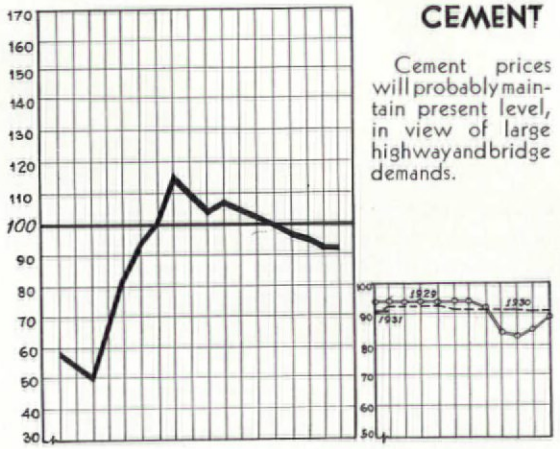
LUMBER

Lumber prices continued weak through February, with no indication of a near-term change in trend.



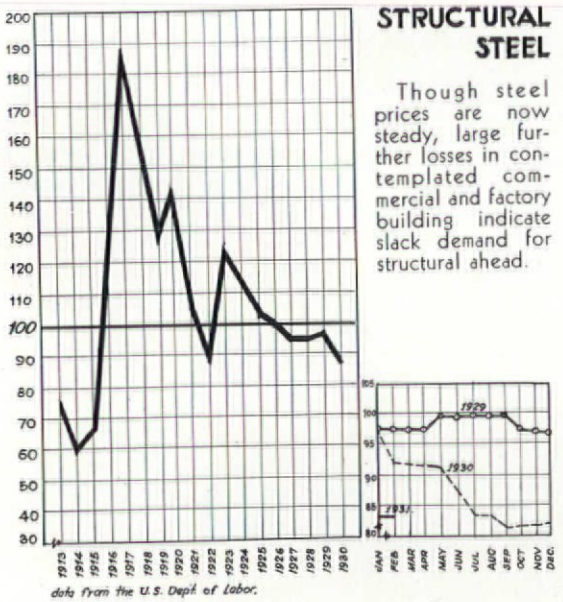
BRICK

Prices for brick continued the downward trend through February. No immediate turn is apparent.



CEMENT

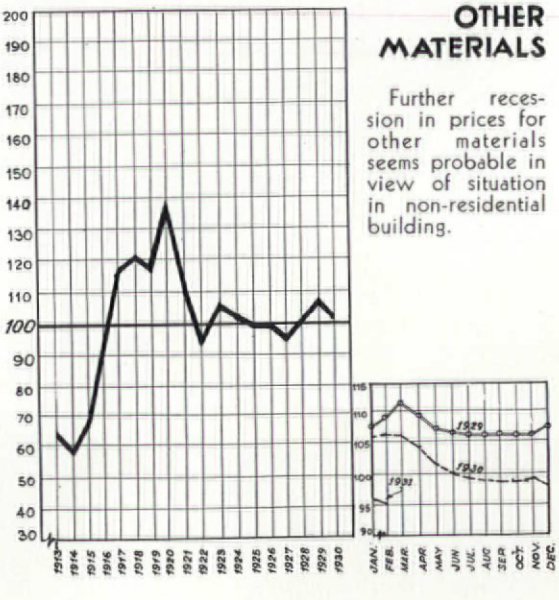
Cement prices will probably maintain present level, in view of large highway and bridge demands.



data from the U.S. Dept of Labor.

STRUCTURAL STEEL

Though steel prices are now steady, large further losses in contemplated commercial and factory building indicate slack demand for structural ahead.



OTHER MATERIALS

Further recession in prices for other materials seems probable in view of situation in non-residential building.

CALENDAR OF EVENTS AND COMPETITIONS

March 2-14	Annual architectural exhibition, Architects' Building, Los Angeles.
March 14	Programs for the A. W. Brown Traveling Scholarship will be issued, calling for delivery of drawings on April 13. Apply to William Dewey Foster, 25 West 45th Street, New York City.
March 16-18	Seventh annual meeting of the Concrete Reinforcing Steel Institute at Biloxi, Miss.
March 28-May 29	Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).
March 30-April 4	House and Garden Exposition, Grand Central Palace, New York City.
April	Second International Congress and Exhibition of Sanitary Engineering and Municipal Hygiene, Milan, Italy. For information, apply to the Secretary General, Congress Internazionale di Tecnica Sanitaria e di Igiene Urbanistica, Milano, Piazza del Duomo 17.
April 2, 3	Preliminary examinations for the Rotch Traveling Scholarship.
April 3	Architectural students wishing to enter a competition for "the design of the most beautiful highway bridge in steel" are invited to submit to the American Institute of Steel Construction, 200 Madison Avenue, New York City, their preliminary sketches to be placed in judgment on this date.
April 7-May 2	Exhibition of Ideal Homes, London (Olympia).
April 13-15	Eighth annual meeting of Producers' Council, Inc., San Antonio, Texas.
April 14-16	Convention of American Institute of Architects, San Antonio, Texas.
April 18	Closing date for applications for Princeton Prizes in Architecture. Address the Director, School of Architecture, Princeton University, Princeton, N. J.
April 18-25	Fourth Biennial Architectural and Allied Arts Exposition, Grand Central Palace, New York City.
May	Exhibition of British Contemporary Art, London (Imperial Institute).
May 4-Aug. 8	Art Exhibition, Royal Academy, London (Burlington House).
May-August	Art Exhibition, Royal Scottish Academy, Edinburgh.
June 1-5	International Town Planning and Housing Federation Congress, Berlin.
July 10-Aug. 30	Vacation-study tour of housing, arranged and directed by The Garden Cities and Town Planning Association, London, in cooperation with the City Affairs Committee, 112 East 19th Street, New York City. For information, address Helen Alfred, Housing Chairman.
October 1	Closing date for entries for Lincoln Arc Welding Prize competition. Address inquiries to the Lincoln Electric Company. Cleveland, Ohio.
November	Exposition of Indian Tribal Arts, Grand Central Art Galleries.
October-December	Art Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).

ARCHITECTS' ANNOUNCEMENTS

EMPLOYMENT OF DRAFTSMEN

Business is on the turn. The demand for competent men will soon be setting in. American Trade Association Executives and National Engineering Societies have compiled rosters of well-qualified business executives and technicians. The present emergency has made available men of splendid experience. Should your requirements be for architectural draftsmen, professional engineers or technicians, write to Walter V. Brown, Engineering Societies Building, 31 West 39th Street, New York City.

ANNOUNCEMENTS

Klekamp and Whitmore, architects and engineers, announce removal of their offices to 188 West Randolph Street, Chicago, Illinois.

E. A. Ehmann, architect, announces removal of his office from the Realty Board Building to 173 East Flagler Street, Miami, Florida.

Stevens and Lee, architects and consultants, announce that George A. Curtin and Harold J. Smith have become full partners in the firm. Offices at 45 Newbury Street, Boston, and 62 Charles Street, East, Toronto.

Preis and Schwarz, architects, have opened an office at 108-04 Queens Boulevard, Forest Hills, N. Y.

Henry R. Parmley, architect and engineer, has opened an office at 526 Judge Building, Salt Lake City, Utah. Manufacturers' catalogs and samples are requested to complete files.

Sidney Weber, Jr., structural engineer, has moved his office to 615 Florida Street, Baton Rouge, La. He requests manufacturers' samples and literature.

Charles Smith and Sons, Inc., general contractors and builders, 101 Water Street, Derby, Conn., wish to announce that they have opened an office in the Hartford Connecticut Trust Company Building at 750 Main Street, Hartford, Conn.

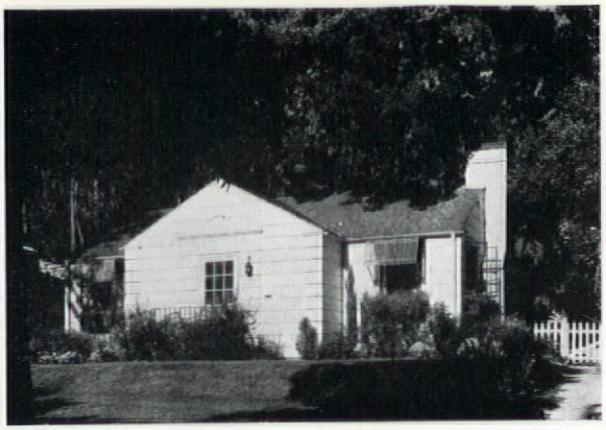
THE APARTMENT HOUSE ISSUE

Three apartment house developments—all illustrated in this number—have been selected for awards by the New York Chapter of the American Institute of Architects.

The medal goes to the Grand Street Apartments, erected for the Amalgamated Clothing Workers, on the lower East Side of New York. Springsteen and Goldhammer are the architects.

Honorable mentions have been given to the Abbott Court Apartments at Radburn, N. J., designed by Andrew J. Thomas, architect, and to 1 Beekman Place, a cooperative apartment house designed by Sloan and Robertson, architects, with Corbett, Harrison and MacMurray as associates.

The awards were announced by Arthur C. Holden, chairman of the prize committee. Mr. Holden is the author of the article on apartment suites of one and more rooms which appears in this issue and which was prepared in cooperation with the apartment house exhibition of the New York Chapter.



Haight

PASADENA, CALIFORNIA
DONALD D. McMURRAY, ARCHITECT

Haight

SANTA BARBARA, CALIFORNIA
REGINALD D. JOHNSON ARCHITECT

HOUSES—THE APRIL ISSUE

REALTY DEVELOPMENTS . . . to whom do they belong? Certainly not to the builder nor to the realty company alone. In line with the movement among architects to develop business there should be a serious study of subdivision developments and leadership that would aid architects to achieve group building commissions. Arthur C. Holden, architect and member of the Committee on Town Planning of The American Institute of Architects, is author of an article which appears as the Technical News and Research subject. He points out the ways in which architects may initiate community plan developments with reference to achievements of architects who associated themselves with reputable realty promoters.

Accompanying this article will be a portfolio of plates illustrating community developments in representative parts of the country—California, Wisconsin, Ohio and New York. Architects in all cases have contributed to the success of these realty enterprises.

Winning designs in The Better Homes in America Architectural Competition will be published as another sequence of plates and plans. Other features of the issue will include a bank building by Eugene Schoen; a telephone building by Densmore, Le Clear and Robbins; the Punch and Judy Theatre in Chicago, remodeled by Eugene Fuhrer; 120 Wall Street by Ely Jacques Kahn; a study of "Plastics," describing such newly developed products as Pyralin, Bakelite, Celluloid and Lumarith; "Organization of the Architect's Office," by Parker Morse Hooper; and several other articles of current interest.

FOREST HILL DEVELOPMENT IN CLEVELAND
ANDREW J. THOMAS, ARCHITECT

Le Man

NORMANDY DEVELOPMENT IN BRONXVILLE, N. Y.
R. H. SCANNELL, ARCHITECT

Interiors of the
CINCINNATI ENQUIRER BUILDING
are painted for lasting beauty and cleanliness

A VERITABLE hive of industry day and night...reporters, clerks, stenographers, salesmen, buyers, countless others passing constantly in and out of its offices...brushing against walls, inevitably leaving smudges—finger prints. And the dust of a busy city always seeping through windows—through doors...settling on every exposed surface...

How can the walls and ceilings of such a building be kept cheerfully light...clean... handsome without the constant annoyance and expense of frequent repainting?

The management of the Cincinnati Enquirer Building has found the answer—as have managers of hundreds of other modern buildings—in the use of Barreled Sunlight.

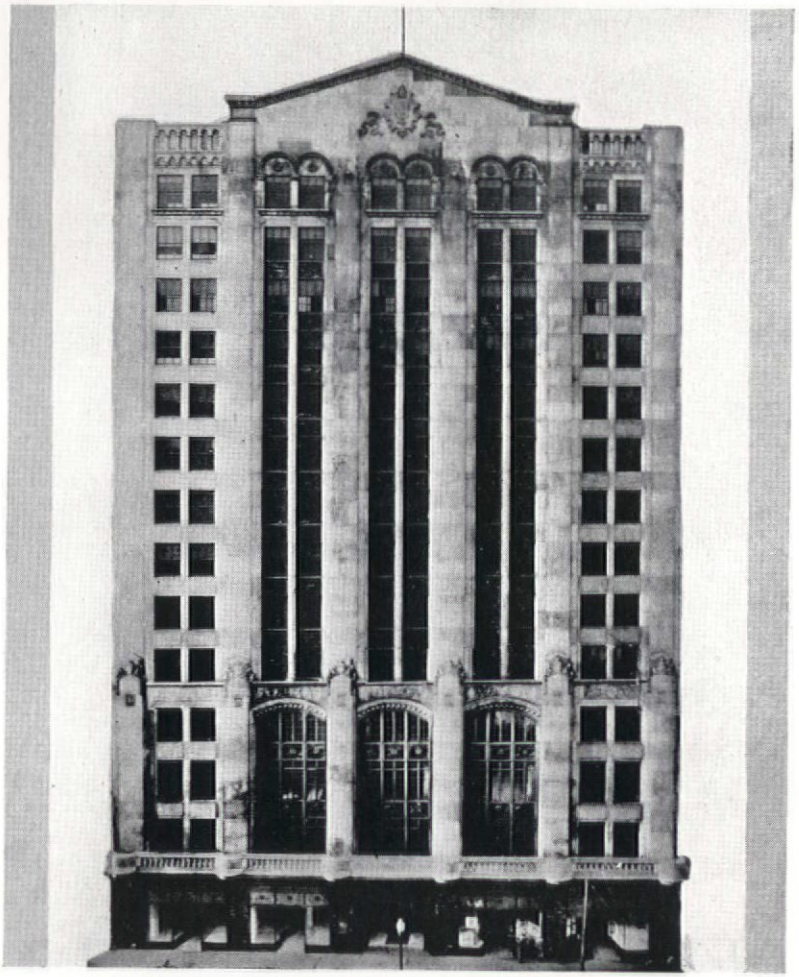
Dust or smudges cannot permanently soil a surface painted with Barreled Sunlight. A moist cloth wipes it clean—quickly, easily. Upkeep is economical...in time and money.

Remarkably durable, Barreled Sunlight retains its handsome cleanliness after repeated washings . . . through long, arduous service.

Whether in long-lasting white, or soft, pleasing tints, Barreled Sunlight is conspicuously good looking, with a lustre of rich depth. An all-oil product, it is readily tinted any desired shade with ordinary colors in oil.

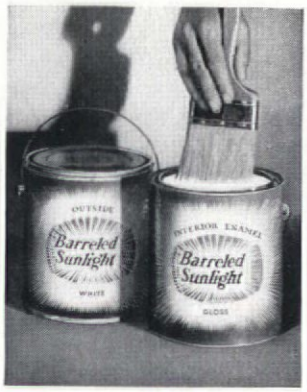
Our complete catalogue is in Sweets, but for your own files we would like to send you our booklet, "For Interiors of Lasting Beauty and Cleanliness."

Write U. S. Gutta Percha Paint Co., 22-C Dudley Street, Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)



THE CINCINNATI ENQUIRER BUILDING, Cincinnati's second largest office building. Here 200 gallons of Barreled Sunlight were used to insure interiors of lasting cleanliness and beauty. (Architects: Lockwood Greene Engineers, Inc.)

BARRELED SUNLIGHT is now available in two forms, Interior and Outside. Write for complete information on Outside Barreled Sunlight—its more pronounced whiteness, richer lustre and marked durability.

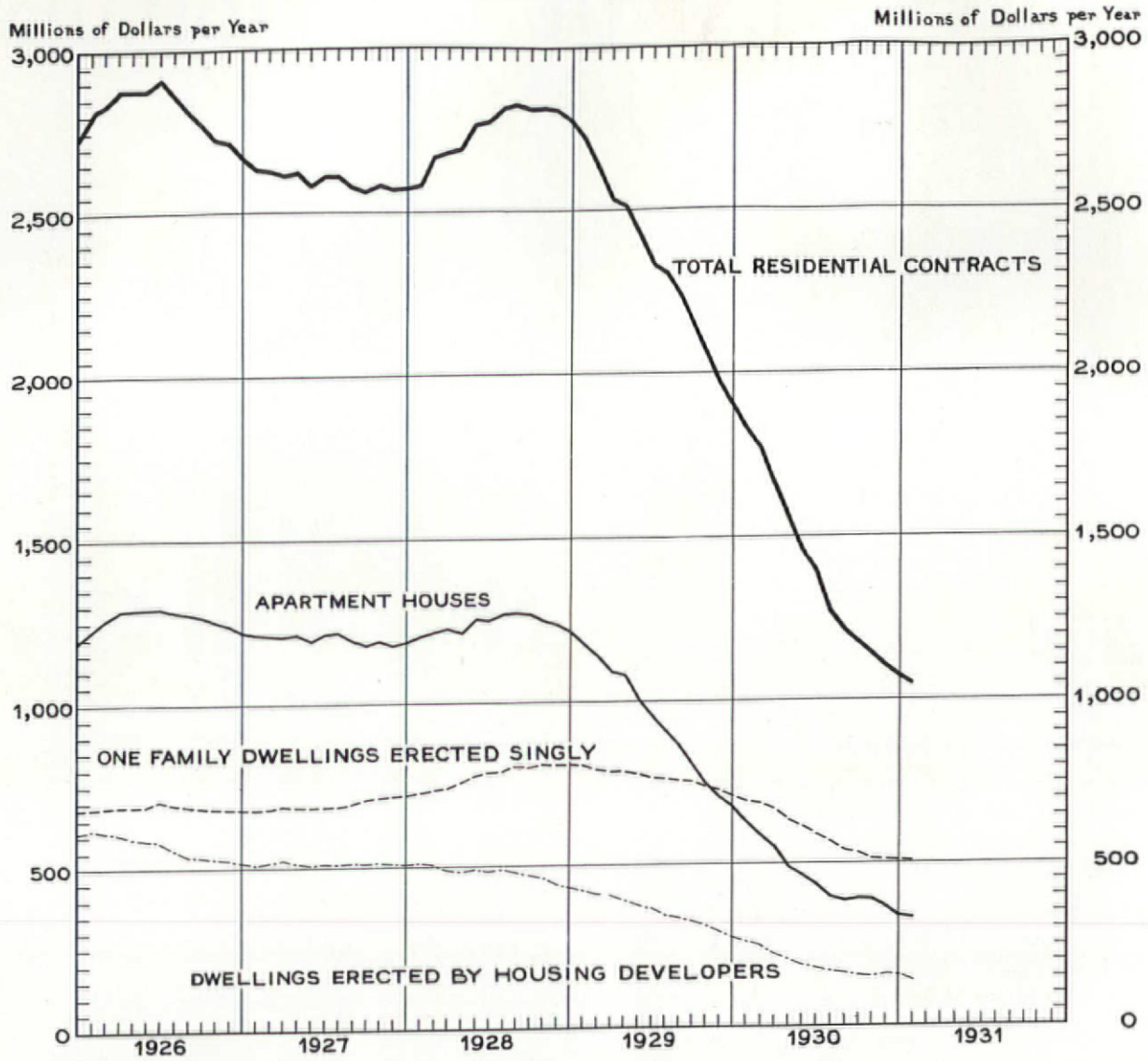


Barreled Sunlight

Reg. U. S. Pat. Off.

TREND OF RESIDENTIAL BUILDING IN 37 EASTERN STATES

(By principal types)



The trend in apartment house construction at this phase of the residential building cycle is probably of large barometric value, since new apartment activity, in recent years, has preceded major movements in the residential field.

Continued from page 273, editorial section

Preliminary figures for February indicate a turn in the trend, the first since August, 1928, at which time it was downward. Though this rise may turn out to be only a false start, the retrenchment has been so deep and so extended as to give reason for the opinion that revival in this type of residential building is definitely at hand.

The trend in apartment house construction at this phase of the residential building cycle is probably of large barometric significance, since it has been new apartment activity that, in recent years, has preceded major movements in the residential field. As a matter of fact new apartment house construction during the period prior to the stock market collapse in 1929 was more important, from the standpoint of contract valuations, than single-family dwellings.

Single-family dwellings erected principally for owner occupancy showed a downward trend in the latter half of 1926, but resumed early in 1927 the rise which, except for minor interruptions, continued until January, 1929. At that time it was on a higher level than ever before, quite unlike the trend in apartment house construction which some few months earlier failed to exceed its previous top recorded in 1926.

The apartment house is essentially an investment property. Though often erected by speculators such

(Continued on page 92, advertising section)

YOU will be interested in this new invention by Andersen engineers, a metal weatherstrip which fits all Andersen double-hung window frames; reduces air leakage 86 per cent; eliminates all rattles, and sells to builders for considerably less than one dollar a set.

No special stock of sash or frames is needed . . . This weatherstrip is installed quickly and easily, without routing, rabbeting or nailing.

I regard Andersen Master Weatherstrips as a real contribution to good construction.

Fred C. Andersen

President, Andersen Frame Corporation

* Patents Applied For

ANDERSEN FRAME CORPORATION, Bayport, Minnesota AR

I am interested in the new Andersen Master Weatherstrip and would like to have ☐ detailed information, ☐ a demonstration and sample. I understand there is no obligation.

PLEASE CHECK: ☐ Architect, ☐ Builder-Contractor, ☐ Jobber-Dealer, ☐ Student

Name_____

Address_____

(*Continued from page 90, advertising section*)
buildings represent large outlay of capital on which prospects for profit must exist. Investors and speculators are by force of circumstances quick to adjust their programs to fundamental conditions. For this reason any major change in the trend of apartment house construction foreshadows a similar change in the trend of residential building in general; such was the case in 1928 and such will likely be the case when the revival in apartment house construction which is now peeping through more definitely asserts itself.

In the case of single-family dwellings erected by housing development companies, the trend in contract values has been almost continuously downward since 1925. Thus this dwelling type seems to have lost most heavily to the apartment house, which has invaded the same outer fringes of our cities and towns that have provided the setting for housing developments.

The immediate future will see growing competition in dwelling types as between apartments and dwellings. To the extent that architects, mortgage bankers and real estate interests sense the trend in the light of existing economic and social tendencies, the next cycle of residential building will be sounder than the one that preceded it. We have passed through a severe business depression which has affected a large section of our home-owner wage earners. The American family is showing a tendency to decline in size; immigration no longer is the important influence on population growth that it was a few years ago. These and many other economic and social considerations will determine ultimately the types of new residential buildings, though it will remain for further improvement in fundamental business conditions to point the way for recovery in the residential field as a whole.

L. Seth Schnitman

IN APPRECIATION

LEROY S. BUFFINGTON

Leroy S. Buffiington, architect, died February 16 in Minneapolis at the age of 83 years. In addition to having designed many public buildings in Minnesota, the Northwest and Canada, including the old state capitol, the St. Paul Union Station, and some of the University of Minnesota buildings, he was credited with the origination of the skyscraper.

The story of the development of the skyscraper is told in an Associated Press dispatch. In 1880 Mr. Buffington had just completed the Boston Block, a 7-story building using more cast iron and I-beams than was usual at that time. He bought two volumes of a translation of Viollet le Duc's discourses on architecture and read in them this paragraph:

"A practical architect might not unnaturally conceive the idea of erecting a vast edifice whose frame should be entirely of iron, and clothing that frame. But it cannot too often be repeated, iron should be left independent; it cannot be allied with masonry."

The idea caught Mr. Buffington's fancy. He began to make drawings and eventually evolved a plan for what he called a "cloudscraper," in which the masonry veneer was supported at each successive story on an iron shelf.

One of his old drawings showed a building 100 stories high, a prophecy which is expected to be fulfilled in New York in a few years. The original drawing and the grant of a patent for the world's first skyscraper are on file in the Patent Office in Washington. Mr. Buffington was derided as a crank and a dreamer and the building was never put up in the form he had envisioned. He received belated recognition in January, 1929, when Rufus Rand, who was then putting up a twenty-five-story building in Minneapolis, paid him one-eighth of 1 per cent royalties on the steel skeleton. The cost of the Rand Building was $1,800,000.

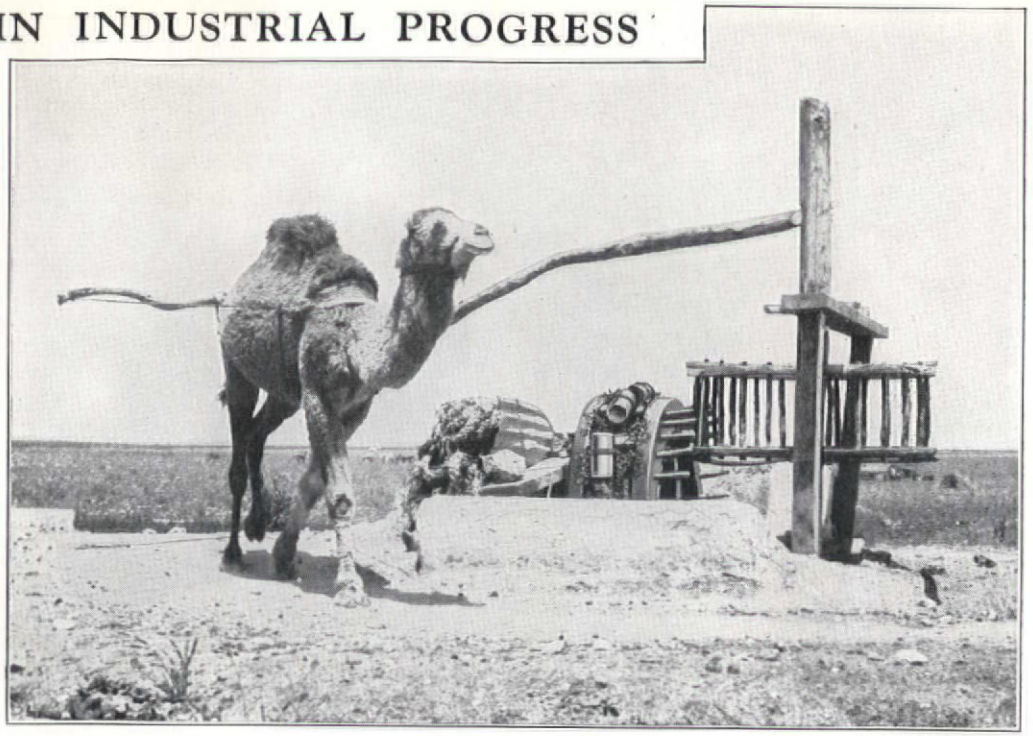
HOWARD K. JONES, PITTSBURGH ARCHITECT

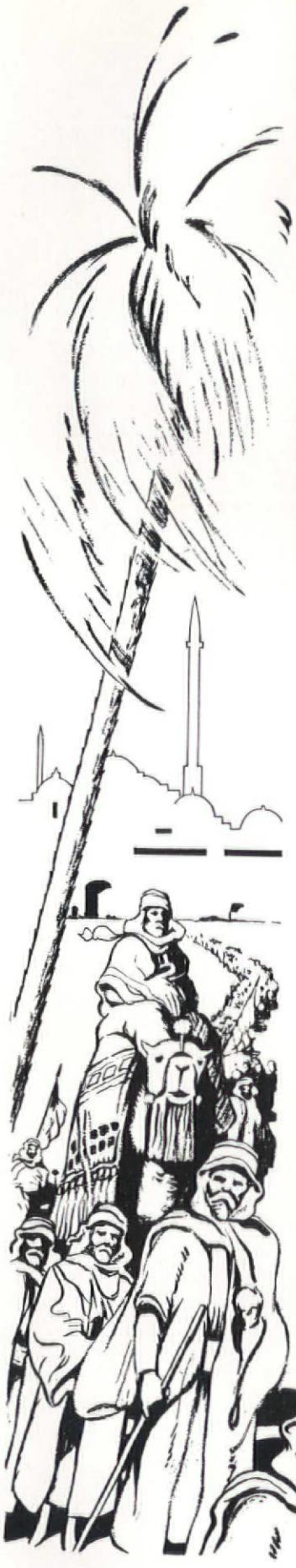
Howard K. Jones, who died January 21, was one of the most widely known architects in western Pennsylvania. He was the senior member of the firm of Alden, Harlow and Jones, with offices in the Farmers Bank Building in Pittsburgh.

He was graduated from the Massachusetts Institute of Technology in 1896 and had long been a junior associate of the firm which he now headed. He was known for his contributions to the design and supervision of many private, public and semi-public buildings in the Pittsburgh district and the northwestern part of the State. Among these are the Farmers Bank Building, Carnegie Institute and Library at Schenley Park and several branch libraries, the South Hills High School, the Wilkinsburg Masonic Building, the Mutual Telephone Company Building and Luther Memorial Church of Erie, the R. B. Mellon residence on Beechwood Boulevard, and many residences in Sewickley, Pittsburgh and Erie.

Mr. Jones was an active member of the American Institute of Architects, a past president of the Pittsburgh Chapter of that Society, and had been re-elected to membership on its board of directors the day prior to his death.

CONTRASTS IN INDUSTRIAL PROGRESS





A one camel-power pump in Morocco

Perfectly content to spend his life traveling an inexorable circle, the camel here typifies the country which supports him. The centuries have left no mark mechanically on the sandy wastes known as Morocco, the land of desert warfare and religious fervor.

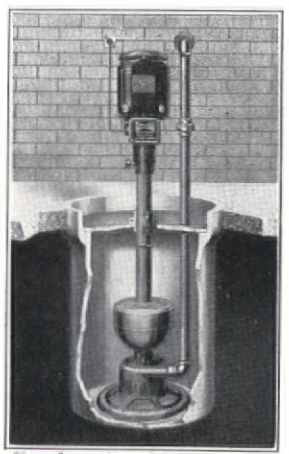
Water is elevated in the chain of earthen pots operated by the crude wooden device that is perhaps best described as a forerunner of a pair of bevel gears. Contrast this with the simple and efficient pumps we use today—equipment like the Penberthy Automatic Electric Sump Pump and Cellar Drainer, which are thoroughly automatic, fully dependable and have low operating costs.

Here indeed are the opposite ends of the march of progress.

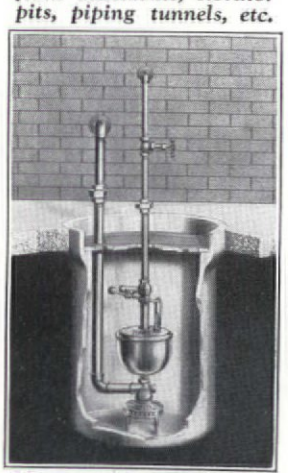
PENBERTHY INJECTOR COMPANY

ESTABLISHED IN 1886 — DETROIT — CANADIAN PLANT WINDSOR, ONT.

PENBERTHY PRODUCTS

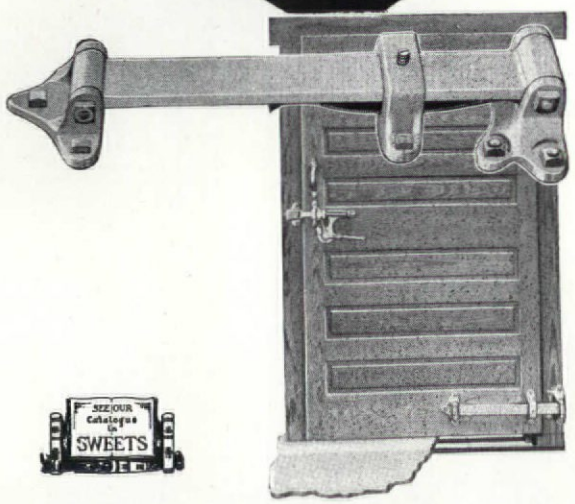


Penberthy Automatic Electric Sump Pumps and Hydraulic Cellar Drainers for draining seepage water from basements, elevator pits, piping tunnels, etc.



Many architects are specifying these pumps to the complete satisfaction of their clients. Penberthy Pumps are quickly obtainable from practically all leading jobbers.

A RIGID HINGE is NOT "Just as good"



All Jamison and Stevenson Doors are equipped with Spring Hinges, because long experience has shown that a rigid hinge is unable to compensate for wear. When a door doesn't seal at the heel, refrigeration escapes. Rigid hinges can't prevent this. Ball bearings don't help. Only the pressure of a spring hinge will save the cold air you pay to create. *The Jamison Hinge is also adjustable.*

Another exclusive feature of Jamison & Stevenson Doors is the patented WEDGETIGHT FASTENER . . . Faster in closing —faster in opening—forces the door tighter on its seal.

JAMISON COLD STORAGE DOOR CO.
CONSOLIDATING JAMISON COLD STORAGE DOOR CO., INC.
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Oldest and largest makers of Cold Storage Doors in the World

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Jamison & Stevenson Cold Storage Doors

OLDEST and LARGEST makers of Cold Storage DOORS

NOTES IN BRIEF

JOINT SESSION: A.I.A. AND PRODUCERS' COUNCIL

The eighth annual meeting of the Producers' Council, Inc., will be held at San Antonio, Texas, April 13, 14 and 15.

The opening session, April 13, will be held jointly with the American Institute of Architects. Several questions of importance will be discussed; "Co-operation in the Building Industry" and "What shall we do to place Quality Competition above Price Competition?"

CHICAGO REGIONAL MEETING

The Producers' Council Club of Chicago has set March 11 for the annual regional meeting of producers and architects located in that section. The usual attendance is several hundred. Louis La-Beaume, will be the guest of honor.

The Chicago Club in its regular bi-monthly luncheon meeting, February 24, had as its speaker H. B. Wheelock, who spoke on "Cooperative Suggestions by an Architect."

LECTURES BY IRVING K. POND

The College of Architecture, University of Michigan, announces the following lectures by Mr. Irving K. Pond:

Thursday, March 19th: Laying the Foundations of Architecture—What Architecture has meant in the Ages.

Friday, March 20th: Possibilities in the American Expression—Toward an American Architecture.

Thursday, March 26th: Psychology of Form—Human reaction to Mass, Details and Direction.

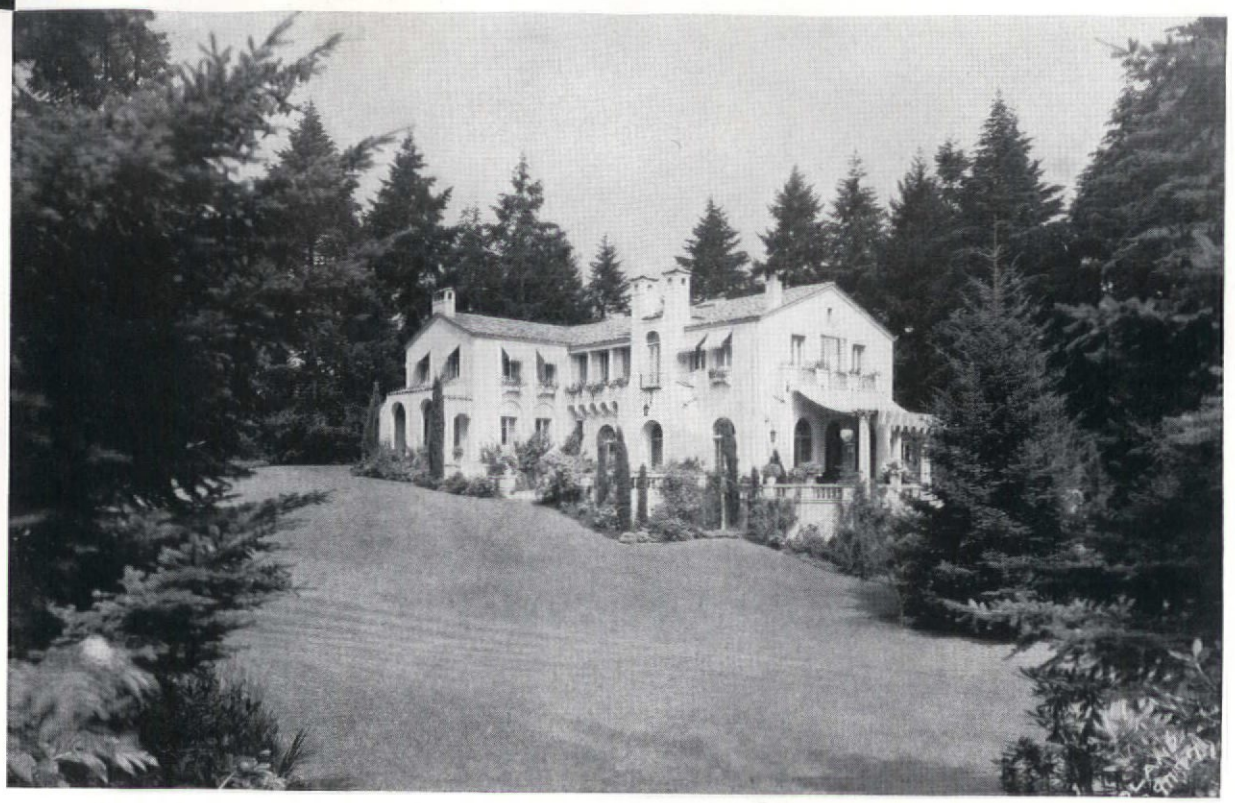
Friday, March 27th: Architecture in Education —Consideration of Architecture as a Cultural Study.

Mr. Pond is a past president of the American Institute of Architects. He is a graduate of the University of Michigan, where he has designed the Michigan Union and the Michigan League Building.

EXHIBITION OF SOUTHERN CALIFORNIAN ARCHITECTURE

An annual architectural exhibition, marking the culmination of architectural development in Southern California during 1930, is being held from March 2nd to 14th in the Architects Building, Los Angeles. The exhibition includes several hundred photographs and sketches of residences, commercial buildings, theaters and churches which have been built during the past year, as well as many now under construction, and is indicative of the type of architecture being developed in California.

(Continued on page 96)



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All Large Cities

The exhibition is being held under the auspices of the State Association of California Architects, the Los Angeles Architectural Club, the Pasadena Architectural Club, the Architects League of Hollywood, the Certificated Architects of Beverly Hills, the Long Beach Architectural Club, and the Santa Barbara and San Diego Chapters of the American Institute of Architects.

EXPOSITION OF INDIAN TRIBAL ARTS

The Exposition of Indian Tribal Arts, now being organized, will present, for the first time, a comprehensive and representative exhibition of the arts and crafts of all the Indian tribes now living in this country.

The Exposition will open at the Grand Central Art Galleries in New York City, in November, 1931. After a month there, it will tour the country.

CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following-named open competitive examinations:

Associate Engineer, $3,200 to $3,700 a year
Assistant Engineer, $2,600 to $3,100 a year

Applications for associate engineer (optional branches—architectural, construction, heating and ventilating, and ordnance) and assistant engineer (optional branches—aeronautical, architectural, electrical, heating and ventilating, mechanical, structural, construction, and fire prevention) must be on file with the U. S. Civil Service Commission at Washington, D. C., not later than April 1, 1931.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the Secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

UNEMPLOYMENT RELIEF

A resolution urging that the United States treasury department distribute part of the government building activities, undertaken to stimulate employment, among private architects and builders, was adopted at the last meeting of the Indiana Chapter, American Institute of Architects, held in Indianapolis. Frederick W. Garber of Cincinnati, regional director for the Great Lakes district, said in a speech that architects can be of real service to their communities by serving on boards that pass on proposed building projects in their cities.

The resolution adopted is in line with the effort of the national organization to support President Hoover in his governmental building program.

THE ALEXANDER THOMSON TRAVELING STUDENTSHIP

The competition is open to students of architecture between the ages of 19 and 28 years, residing in the United Kingdom and Southern Ireland. Copies of the conditions may be obtained on application to William MacLean, Secretary, Glasgow Institute of Architects, 21 West George Street, Glasgow, C.2.

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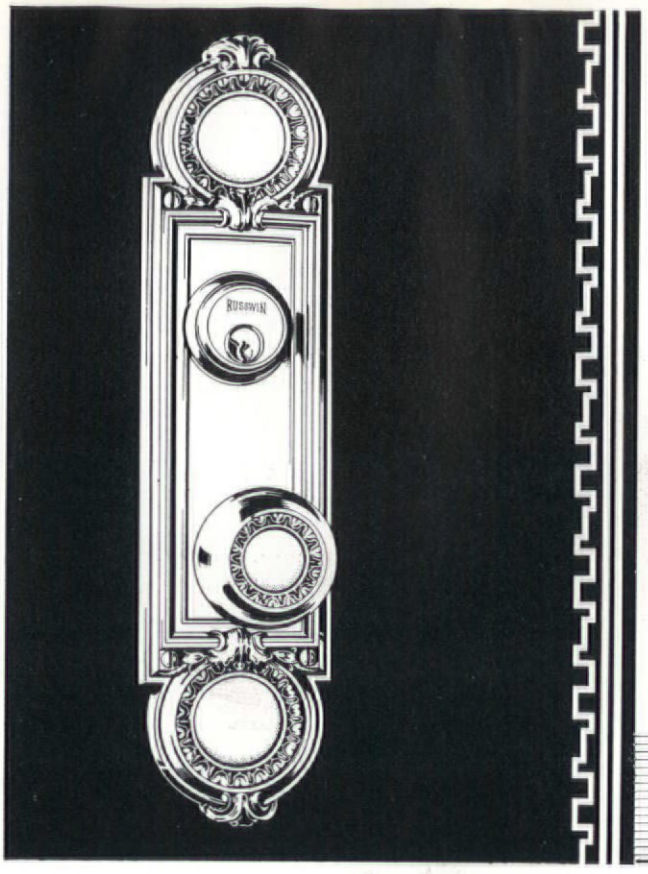

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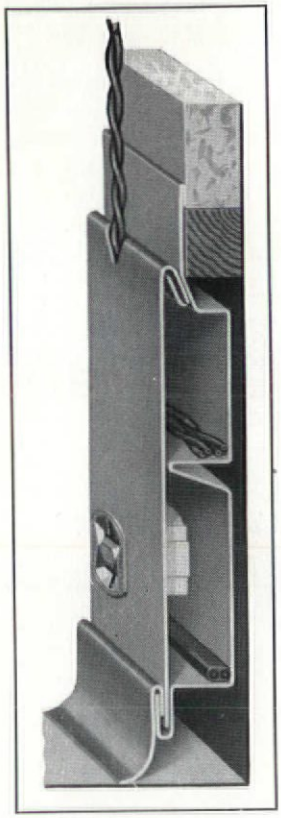

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"WHO DESIGNED WHAT?"

As F.P.A. observed in his famous column, "The Conning Tower," in the *New York World:*

"We never shall understand why architecture is so slightly appreciated, especially in a city that has conspicuous examples of its beauty.

"It appalled us, as it appals us every time we realize the truth of it, to know how few persons know who designed what. In a group of ten persons known to be fairly well informed not one knew who had designed the Woolworth Building, although Cass Gilbert, as the architect, got a prize for it only a few weeks ago. Only one in ten knew who had designed the Chrysler Building, and none who was the Empire State Building's architect."

BOK AWARD TO PAUL P. CRET, ARCHITECT

Presentation of the tenth Philadelphia award has been made to Paul P. Cret, architect, for his part in the beautification of Philadelphia.

The award was founded in 1921 by the late Edward Bok and is given annually to the individual who in the preceding year "shall have performed or brought to its culmination an act or contributed a service calculated to advance the best and largest interests of the community of which Philadelphia is the center."

The award consists of a check for $10,000 and an embossed scroll contained in an ivory casket. This is the first time an architect has been honored by the award.

Mr. Cret is professor of design in the School of Fine Arts at the University of Pennsylvania, consulting architect-in-chief to the American Battle Monuments Commission, and a member of the Philadelphia art jury. He designed the Delaware River Bridge between Philadelphia and Camden, the Rodin Museum and many other outstanding architectural masterpieces in Philadelphia. He helped design the Pan-American Union Building in Washington, the Valley Forge Memorial Arch. Indianapolis Public Library and the Detroit Institute of Fine Arts.

ROTCH TRAVELING SCHOLARSHIP

Preliminary examinations for the Rotch Traveling Scholarship will be held this year on April 2 and 3.

There will be sketches "en loge" April 6 and 8, open to all who are eligible under rules of the scholarship. From the logistes there will be made a selection of four who will be admitted to final competition April 18.

The award will be made on recommendation of a jury, and the candidate chosen will be given the scholarship for a time to be determined by the committee in consultation with the winner.

The amount of the prize is $3,000. The Boston Society of Architects has offered a second prize of $100 to be awarded to the candidate placed second.

For further information apply to C. H. Blackall, secretary, 31 West Street, Boston.

(*Continued on page 100*)

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The COLUMBIA-PRESBYTERIAN MEDICAL CENTER
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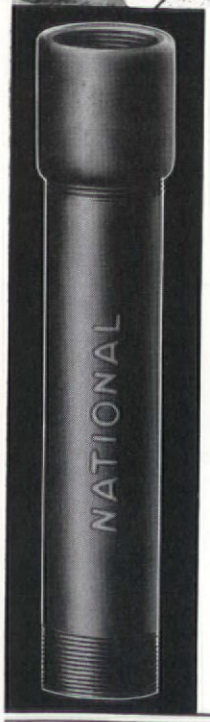

A great modern hospital lays exacting requirements upon those who build it. Within its walls, temperature, air, light, noise, vibration, and whatever else has influence must be controlled in the interest of the skilled work that is to be done, the precise use of delicate instruments that are to be employed, the sensitive processes of nature that are to be invoked, for the restoration of health.

All these provisions must be guarded. No makeshift devices, no compromises of quality in material or thoroughness in workmanship, can be tolerated. It is an evidence of merit for any equipment or any product to find important use in such a building.

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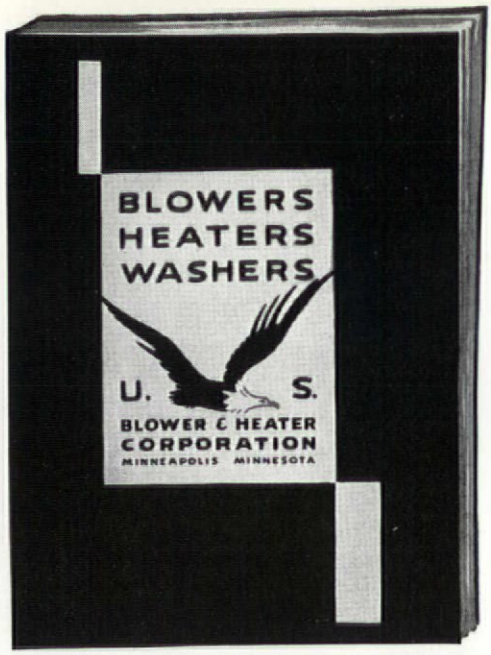

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BOOTH TRAVELING FELLOWSHIP

The George G. Booth Traveling Fellowship in Architecture will again be awarded by competition this spring. The income from the fellowship fund is $1200. The competition is open to unmarried men whose thirty-first birthday comes after April 11, 1931. Candidates should be graduates in architecture of the University of Michigan or should have completed in residence substantially the last two years of the four-year course.

The program will be handed to candidates on April 11th, when the preliminary sketch is to be made. The problem is to be developed during the two weeks beginning on Monday, April 13th.

Those intending to compete should write as soon as possible to Professor Emil Lorch, College of Architecture, University of Michigan.

ADVERTISING THE ARCHITECT

The Architects League of Hollywood has in preparation a series of articles dealing with the value and scope of the architect's services. These articles are being mailed direct to property owners, building and loan associations and prominent realtors of Hollywood and Los Angeles.

The first article has just been put in the mails. It concerns "The Economic Value of an Architect" and opens thus:

"Would you willingly enter into a building contract in which you had little or no protection? You quickly answer—'Why, of course I would not.' True, no one would knowingly do this, and yet there are hundreds of owners who innocently and in good faith enter into building contracts that offer them absolutely no protection whatever, and in which their carelessness is daily costing them many thousands of dollars.

"It is quite obvious that for an owner to protect his interest under a building contract it will be ABSOLUTELY NECESSARY for him to have written into the contract a complete and detailed list and description of every item going into the building, specifying the size, make and quality of each of the many hundreds of materials, also the workmanship with which each is to be installed. He must also have incorporated into the contract a complete set of the legal conditions under which the building is to be erected. The only person qualified and appointed by the State of California to do this work for you is an Architect."

SALEM ROOFS

An attractive brochure with the title, "Salem Roofs," has been issued by the Johns-Manville Architectural Service.

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THE ARCHITECTURAL RECORD

Published Monthly by F. W. Dodge Corporation, 115–119 W. 40th St., New York

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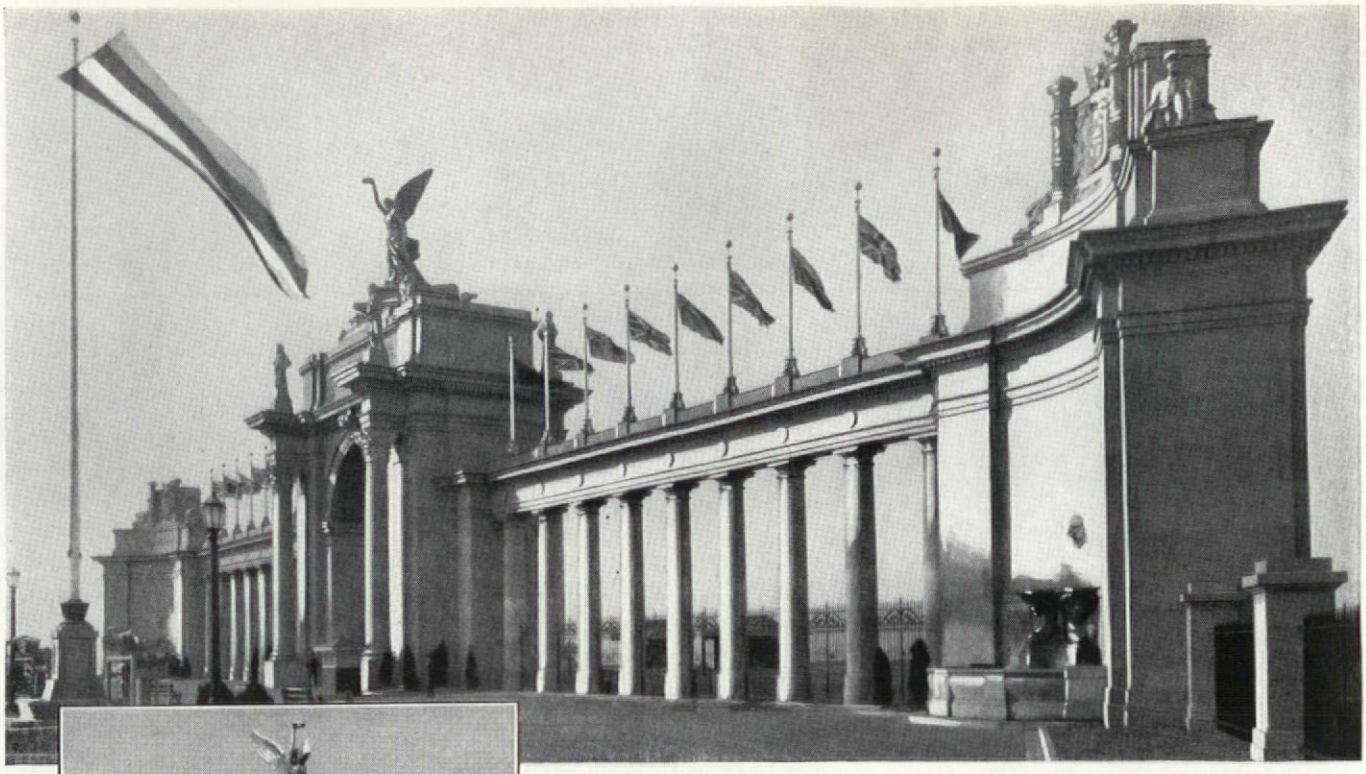

Prince's Gate, New Eastern Entrance, Canadian National Exhibition, Toronto, Ont., Canada. Chapman & Oxley, Architects. Sullivan & Fried, Genl. Contrs. All artificial stone waterproofed with Truscon Waterproofing Paste Concentrated. Truscon Super-Por-Seal (transparent surface dampproofing) also used.

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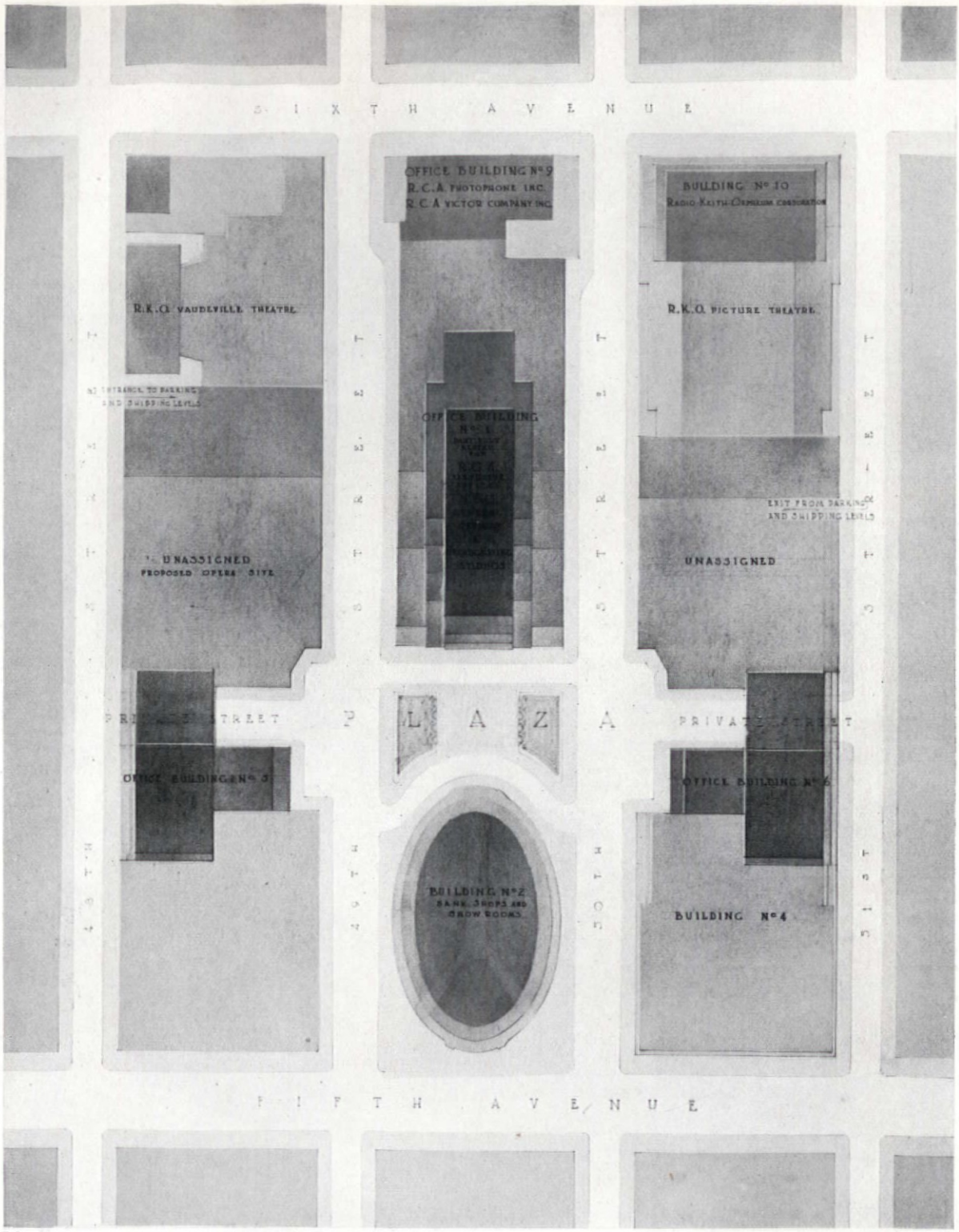

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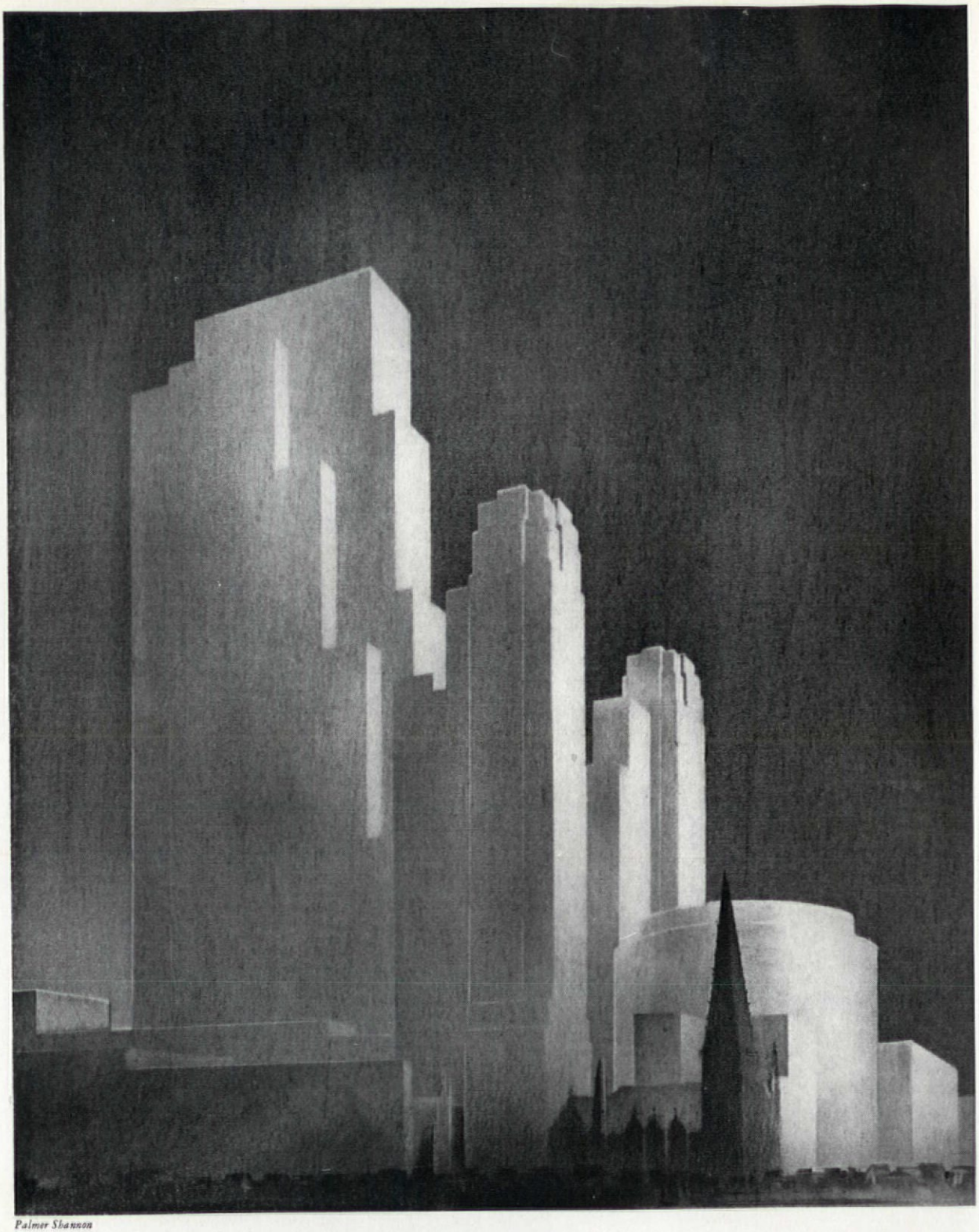
GROUP PLAN (See frontispiece)

RADIO CITY, METROPOLITAN SQUARE, NEW YORK CITY
REINHARD AND HOFMEISTER; CORBETT, HARRISON AND MacMURRAY;
RAYMOND HOOD, GODLEY AND FOUILHOUX, ARCHITECTS



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GROUP PERSPECTIVE
(Group plan on preceding page.)

RADIO CITY, METROPOLITAN SQUARE, NEW YORK CITY
REINHARD AND HOFMEISTER; CORBETT, HARRISON AND MacMURRAY;
RAYMOND HOOD, GODLEY AND FOUILHOUX, ARCHITECTS

THE ARCHITECTURAL RECORD
AN ILLUSTRATED MONTHLY MAGAZINE
OF ARCHITECTURE

VOLUME 69 APRIL · 1931 NUMBER 4

WHAT IS THE ROCKEFELLER RADIO CITY?

COMMENTS BY L. ANDREW REINHARD, ARCHITECT

Ground area: 550,000 square feet. Rentable floor area: 5,000,000 square feet. Estimated cost of construction: $100,000,000. Construction begins June 1931. Central tower and two theaters will be completed in autumn of 1932.

Was project designed for 1931 or 1951? The whole scheme was studied with an eye to future earnings. To justify its existence as a forerunner of group planning, the project must be as sound, economically, for the period between 1931 and 1951 (and beyond) as for either of these years.

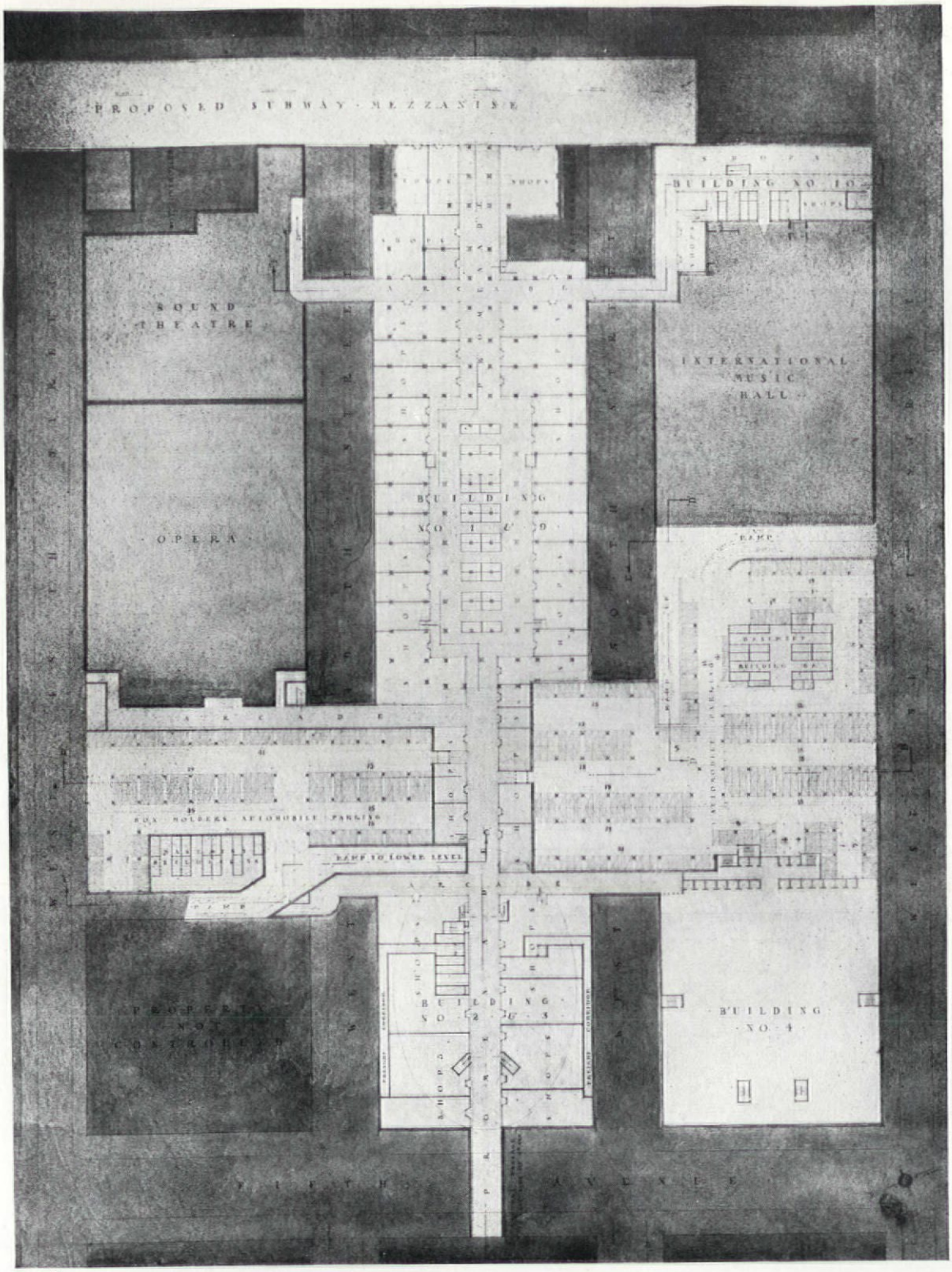
The vast size of the enterprise made calculations on the expected income from the investment a most important consideration in determining the plan. In the past the architect has had to deal with plots of 25′ x 100′, then 50′ x 100′, and gradually increasing until the average city block of 200′ x 200′ or 200′ x 300′ became economically desirable. A ground area of 40,000 to 60,000 square feet is considered a large plot. In the Radio City project the ground area is 550,000 square feet. This is equivalent to approximately 10 Graybar Building sites or 13 Chrysler Building sites!

One must realize that what might look like a small change in the plan or arrangement of buildings would throw the income of the enterprise anywhere from $750,000 in the red to $750,000 in the black—a difference of $1,500,000 in the annual revenue! This is not unreasonable—imagine a change in a building the size of the Graybar Building which would show a difference of $150,000 in the rent roll; multiply this figure by ten and you will have the magnitude of the Radio City project.

The importance of these income producing considerations cannot be stressed too much. Should the enterprise, as an example of group planning, prove a financial failure, the banking interests, mortgage and realty companies and others who are watching the venture closely would be discouraged as to the professional abilities of architects, and the group planning of commercial structures would go back to the days of 1931 to remain there for a long time to come.

Did neighboring structures affect the design? No; on the contrary, the values of neighboring properties will in very short order be increased to such an extent as to demand future development and improvement of existing structures. These will then be brought along in the spirit of the Rockefeller project.

In what way did the problem of traffic influence the planning? Traffic is an unsolved problem in New York—it was, however, given much thought in the planning of this group. With the theaters and studios of the radio companies, as well as the shops



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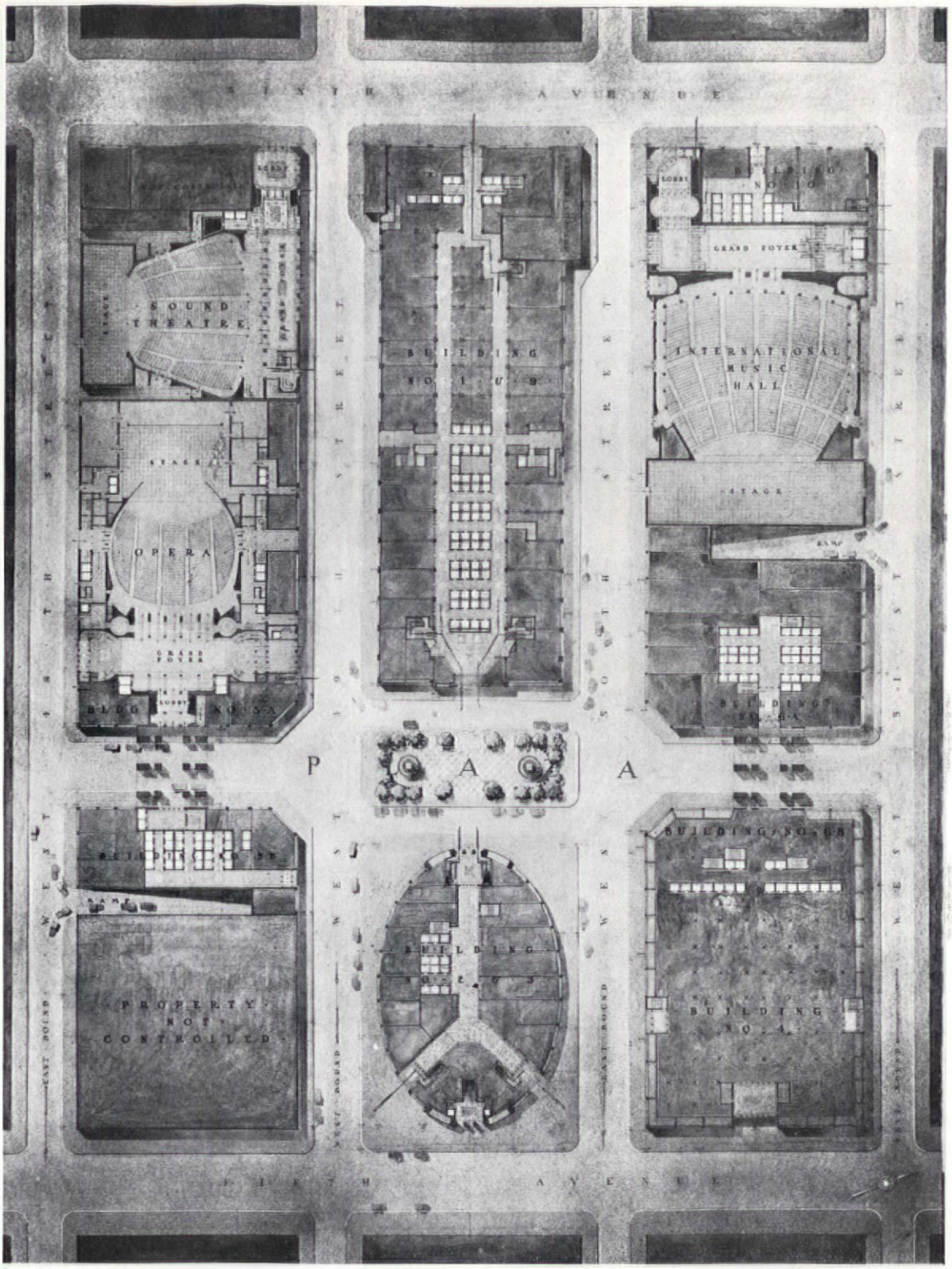

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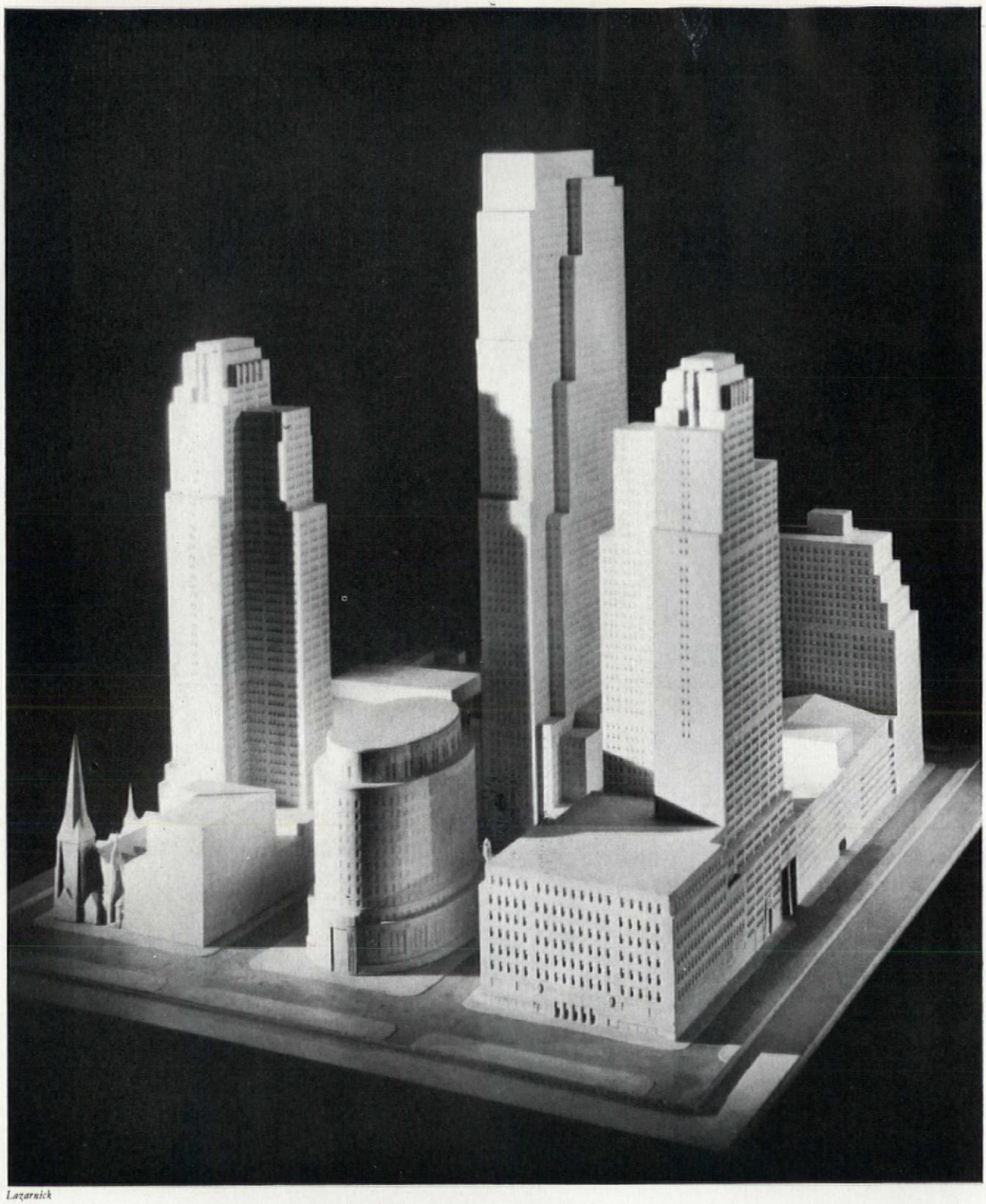
GROUND FLOOR PLAN

RADIO CITY, METROPOLITAN SQUARE, NEW YORK CITY
REINHARD AND HOFMEISTER; CORBETT, HARRISON AND MacMURRAY;
RAYMOND HOOD, GODLEY AND FOUILHOUX, ARCHITECTS



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VIEW OF MODEL

RADIO CITY, METROPOLITAN SQUARE, NEW YORK CITY
REINHARD AND HOFMEISTER; CORBETT, HARRISON AND MacMURRAY;
RAYMOND HOOD, GODLEY AND FOUILHOUX, ARCHITECTS

and business offices, attracting each day a moving population of 200,000—equivalent to the population of a city like Hartford—some means of facilitating traffic movements had to be found.

Forty-ninth and Fiftieth Streets have been widened 15 feet, each being made a roadway 75 feet wide (approximately the width of Lexington Avenue). Forty-eighth and Fifty-first Streets could not be altered since some of the property fronting on these streets was not under control.

The central plaza with the two new streets parallel to Fifth Avenue likewise opens up the ground plan. This park, from the economic point of view, is not lost space. A new shopping center is created within the group of buildings. A constant flow of traffic from early in the morning until late at night because of the studios and theaters—practically twice the normal shopping day—permits relatively high ground rentals which compensate the loss of revenue from the plaza itself.

Parking space for 663 automobiles is provided on two underground levels running through to all the buildings and united for easy access.

How was the grouping of buildings determined? The office towers are staggered in plan so that one building will not obstruct the others in light or vision. The theaters and studios are kept low as intermediate structures not requiring light.

Why does the bank on the Fifth Avenue site take an elliptical shape? In contrast with the gridiron plan of the city an oval building will be a distinct marker, it is felt. Some feature had to be developed to attract the attention of the passing public on the avenue. Since the property between Forty-eighth and Forty-ninth Streets was not controlled, the middle block alone could be developed with this purpose in view. The oval structure was evolved consequently as a readily recognizable marker. It also opens up the line of vision into the plaza and shopping center, which otherwise could not be seen easily from Fifth Avenue.

What determined the tower height? Figures—cost and return! The central tower shaft has 2,000,000 square feet of floor area between the second and sixty-fifth stories, or twice the area of the Graybar Building. The tower could of course go higher, but this is not economically necessary.

How was window spacing determined? Purely from a renting standpoint. The fenestration was a natural development from the plan, inasmuch as the service and elevator areas and steel framing were all definitely determined. The steel span of 27′ 6″ thus became the working unit. By using four windows to a bay the most flexible subdivision of space was secured. Units of two, three or four offices can be easily provided as the tenants may desire. At the same time there is plenty of window area for large working space.

What materials will be used for the exterior walls? This is still an open question. Much study has yet to be given to the external appearance of the buildings. The model, as it stands, represents the rentable cubage. It does not attempt to show any architectural treatment, which is another problem in itself. Four studies have already been made of the exterior of the central tower: one shows a horizontal treatment (to satisfy the "horizontalists"), another a vertical treatment (to satisfy the "verticalists"), the third a wall pattern arrangement (to satisfy the decoratively inclined), and the fourth an unadorned arrangement (to satisfy the functionally-minded). Any one of the four schemes can be selected—the rentals will not be affected.

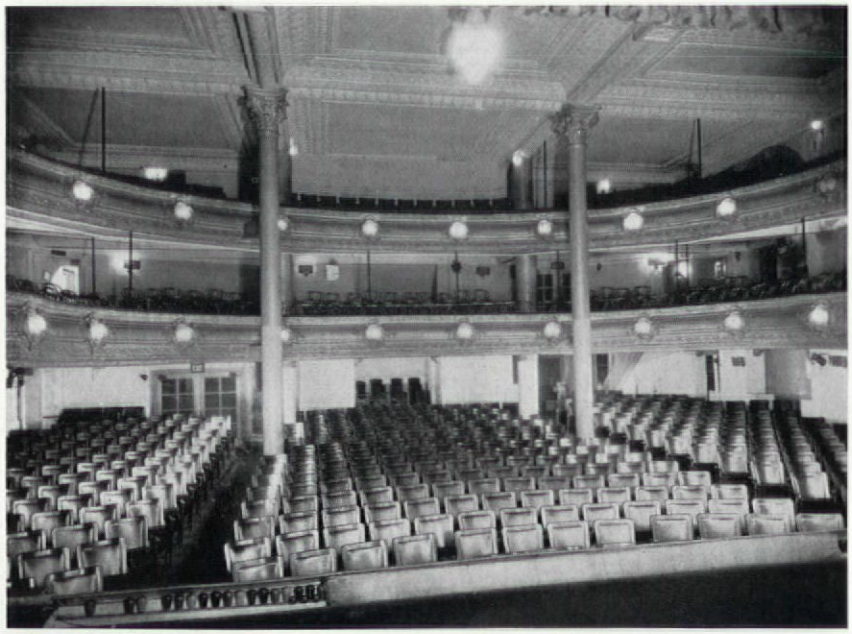
How far did the planning affect the renting schedule? At all times the owners' interest—that is, the renting schedule—was paramount. A sound plan, like a machine, can always be made beautiful!

Trowbridge

THE PUNCH AND JUDY THEATER

A REMODELING OF AN OLDER PLAYHOUSE IN CHICAGO

EUGENE FUHRER, ARCHITECT—NICOLAS REMISOFF, THEATER CONSULTANT

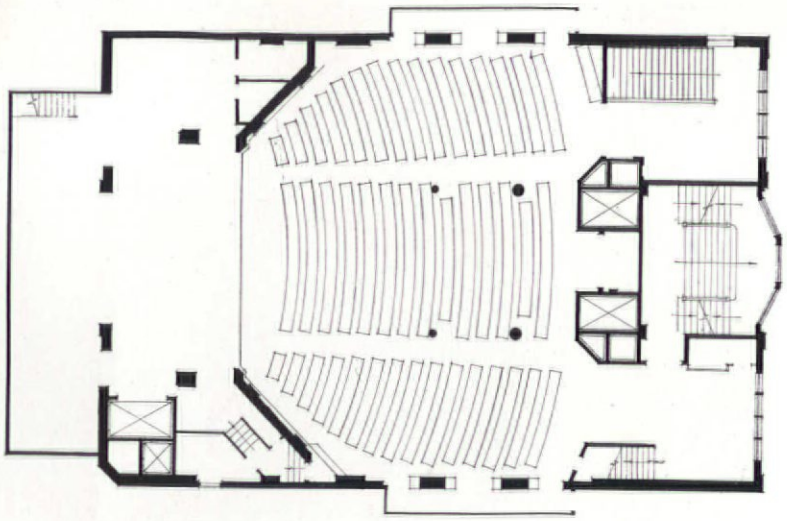


Kaufmann and Fabry Co.

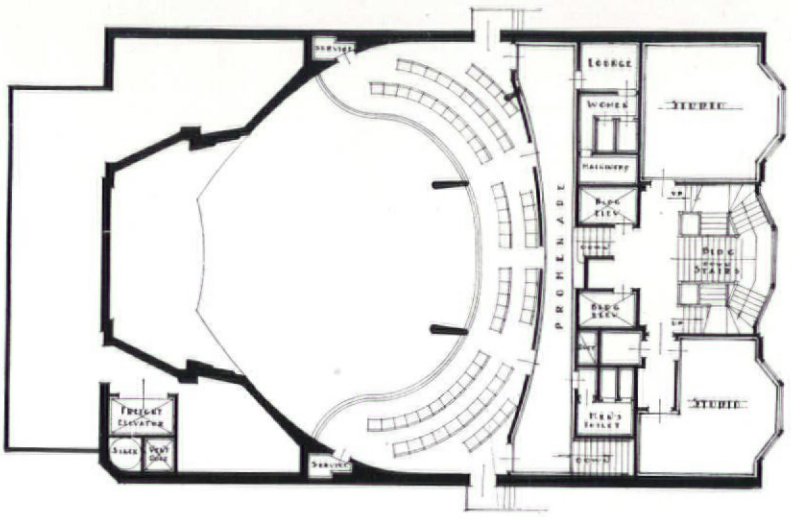
The old Central Theater Auditorium as it appeared when used for light opera and musical productions. With the elimination of the upper balcony and the provision of acoustical appointments, comfortable seats and proper ventilation, it has been adapted to the presentation of "talkies" and motion pictures.

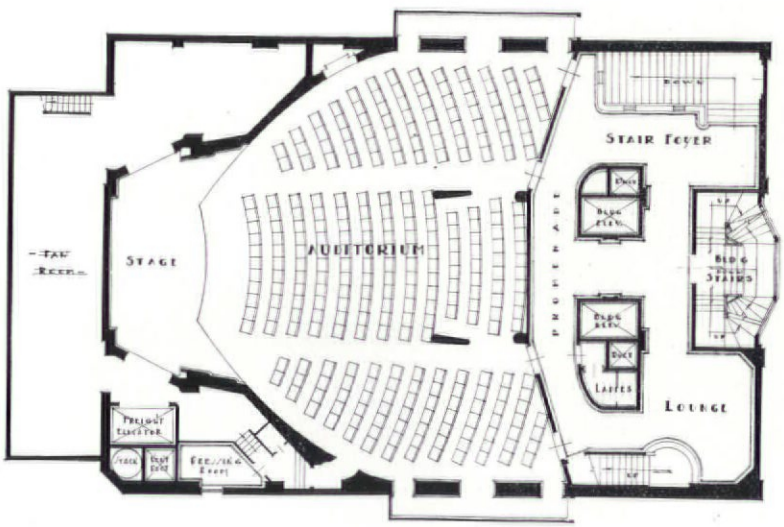
PUNCH AND JUDY THEATER
64 E. VAN BUREN STREET
CHICAGO

EUGENE FUHRER, ARCHITECT
NICOLAS REMISOFF,
THEATER CONSULTANT



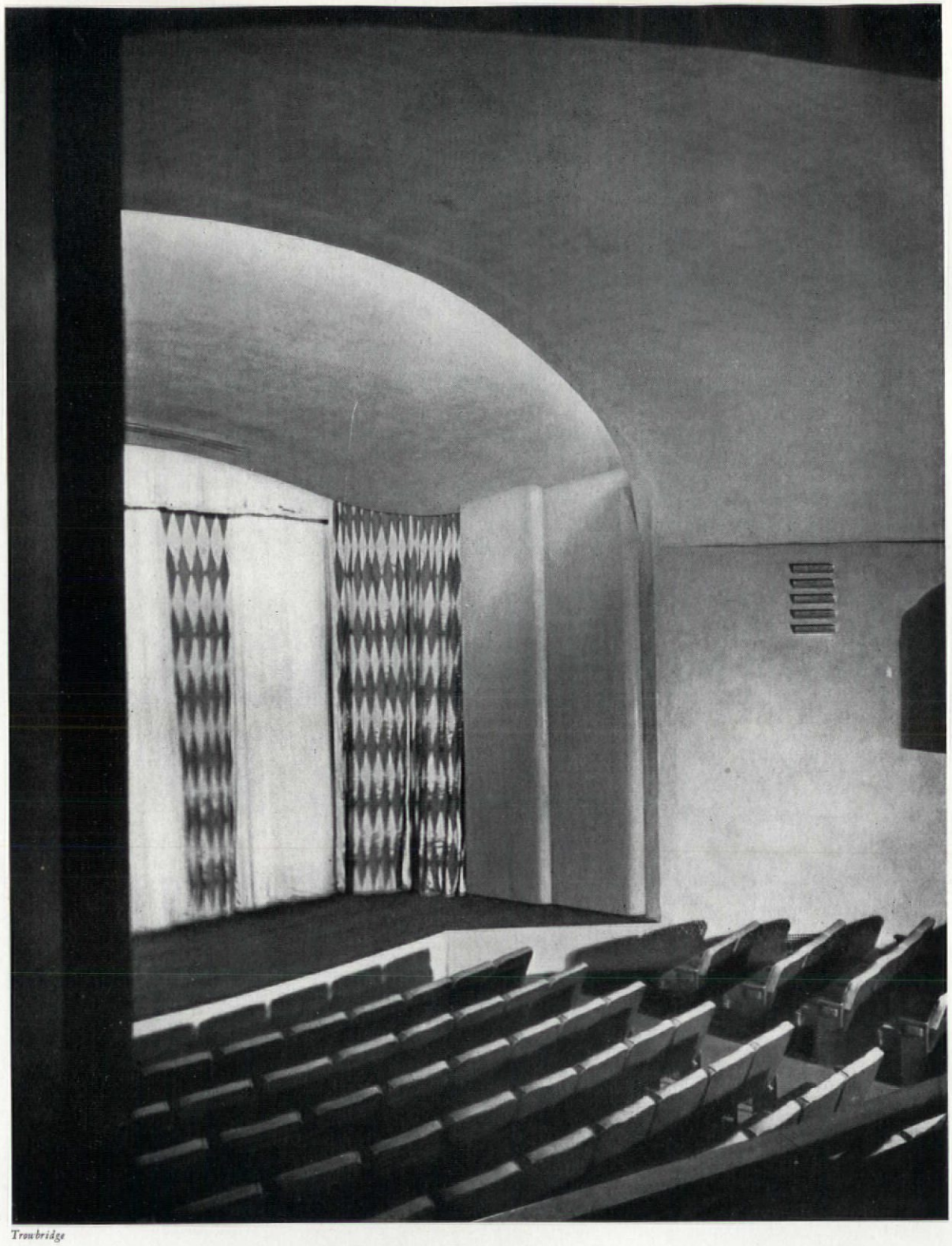
AUDITORIUM PLAN
BEFORE ALTERATIONS





PLANS
AFTER ALTERATIONS

The auditorium interior has been changed from a squarish plan seating 850 to a more circular arrangement accommodating 375. The obstructing columns have been camouflaged into structural piers. The upper balcony has been incorporated into a domical ceiling.



Trowbridge

Lights with special reflectors are concealed in the proscenium arch and focused on the curtain, made of silvery silk, which throws back the light into the auditorium. Except for dim lights at side walls this is the only illumination.

PUNCH AND JUDY THEATER, CHICAGO
EUGENE FUHRER, ARCHITECT
NICOLAS REMISOFF, THEATER CONSULTANT

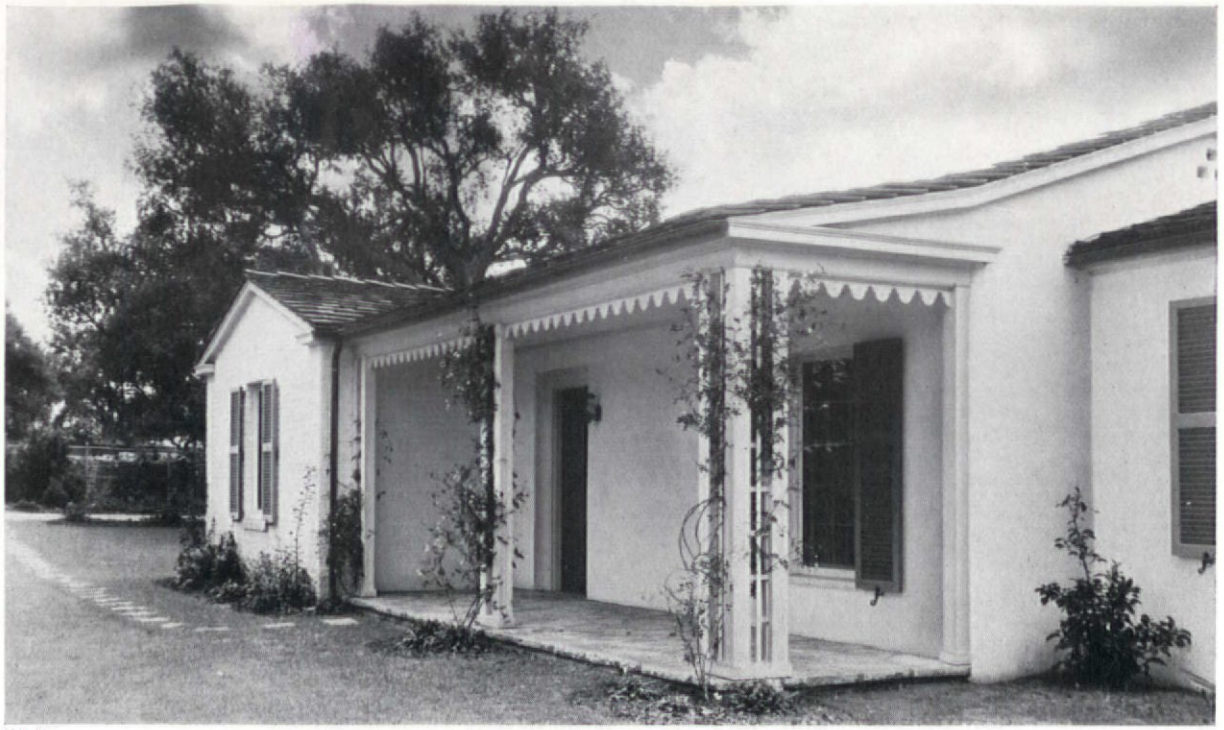
Trowbridge

Color scheme is blue, red and fawn. Chairs are upholstered in red with backs in slate black. Carpet is a darker red than the seats. Walls are of fawn or sand-finished plaster with penetrations and ceilings under loges painted black.

PUNCH AND JUDY THEATER, CHICAGO
EUGENE FUHRER, ARCHITECT
NICOLAS REMISOFF, THEATER CONSULTANT

Trowbridge

PUNCH AND JUDY THEATER, CHICAGO
EUGENE FUHRER, ARCHITECT
NICOLAS REMISOFF, THEATER CONSULTANT



Haight

GOLD MEDAL WINNER—COTTAGE ON ESTATE OF W. R. DICKINSON
HOPE RANCH PARK, SANTA BARBARA, CALIFORNIA
REGINALD D. JOHNSON, ARCHITECT

THE 1930 BETTER HOMES COMPETITION*

The gold medal in the 1930 small house architectural competition, conducted for the first time by Better Homes in America, has been awarded to Reginald D. Johnson, architect of Los Angeles, for his design of a cottage on the estate of William R. Dickinson at Hope Ranch Park, Santa Barbara, California.

Honorable mention in the one-story class went to H. Roy Kelley of Los Angeles for a home at Palos Verdes, to Roland E. Coate of Los Angeles for a home at Leimert Park, and to Donald D. McMurray of Pasadena.

In the one-and-a-half-story class, honorable mention was given to Raymond J. Percival of Hartford, Conn., for his design of the residence of Stanley F. Withe of Sunnyslope Farm, Collinsville, Conn., and to C. C. Merritt of Larchmont, New York, for the residence of Russell Hoyt at Greenwich, Conn.

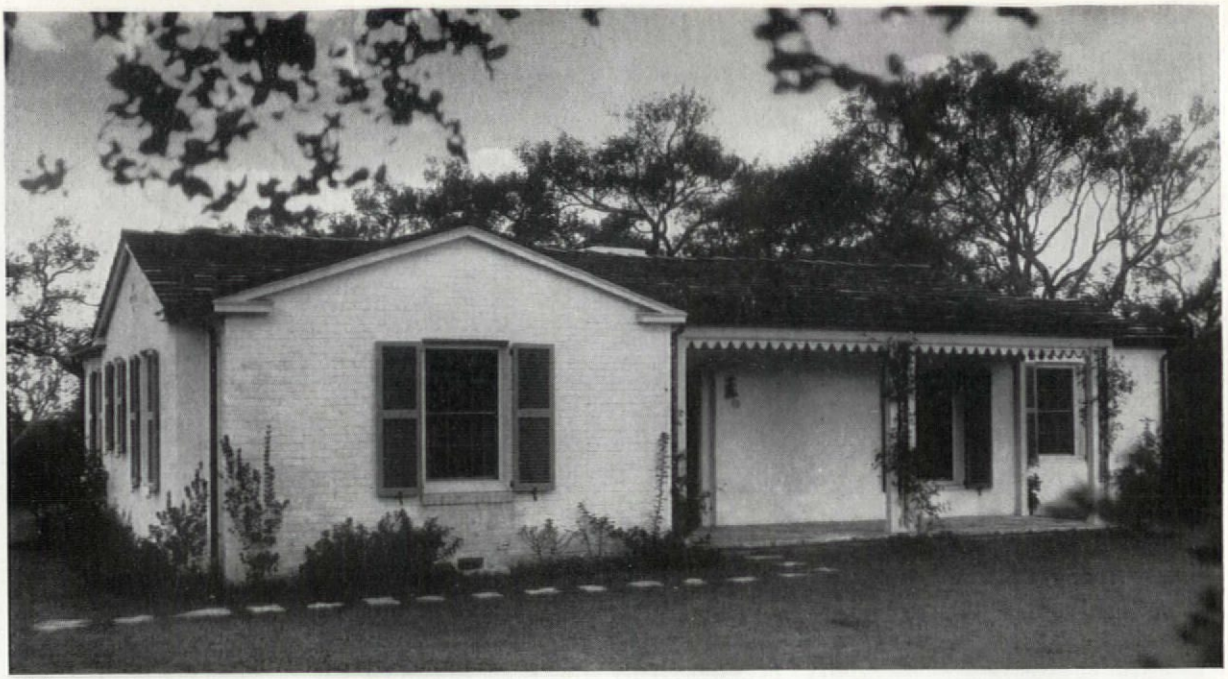
In the two-story class, honorable mention was given to Dwight James Baum, Riverdale, New York, for the residence of Miss E. C. Malady, Fieldston, New York, and to C. C. Merritt of Larchmont, New York, for the residence of Frank H. O'Reilly at Greenwich, Conn.

The awards were made for homes erected in 1929, the purpose of the competition being to discover and to call attention to the best small houses actually constructed during that year. The medal is the gift of Mrs. William Brown Meloney of New York, and is being designed by Gutzon Borglum.

The committee on award, of which Frederick L. Ackerman of New York was chairman, included also George Howe of Philadelphia, William J. Sayward of Atlanta, and Irwin S. Porter and Ward Brown of Washington, D. C.

A similar competition will be sponsored in 1931 by Better Homes in America. See announcement in *News in Brief*.

*Each design illustrated is copyrighted as the private property of the architect.

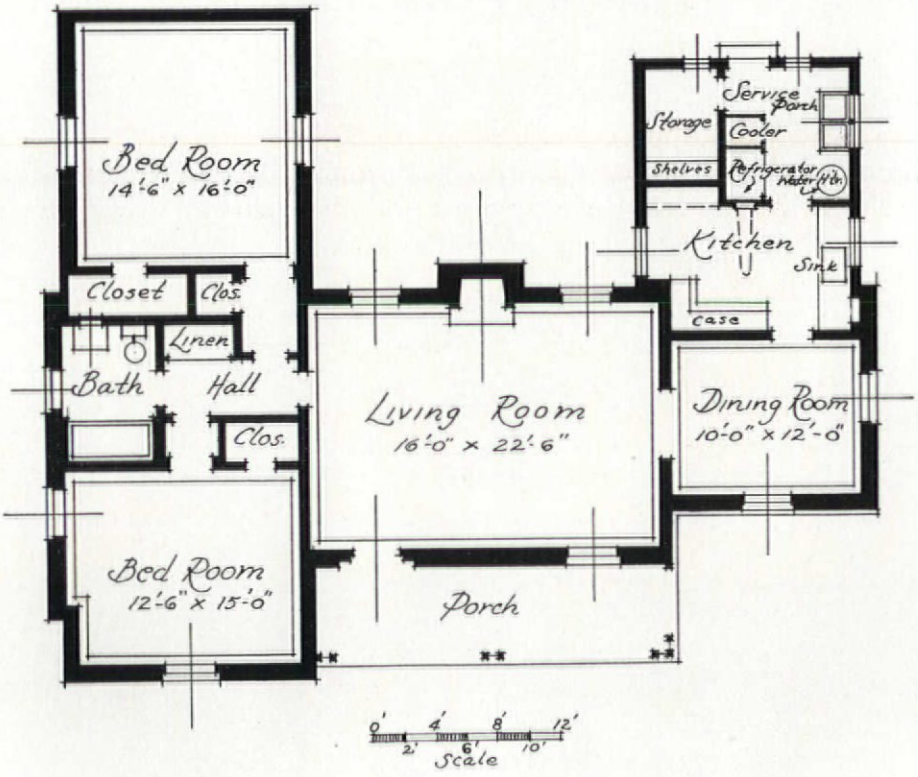


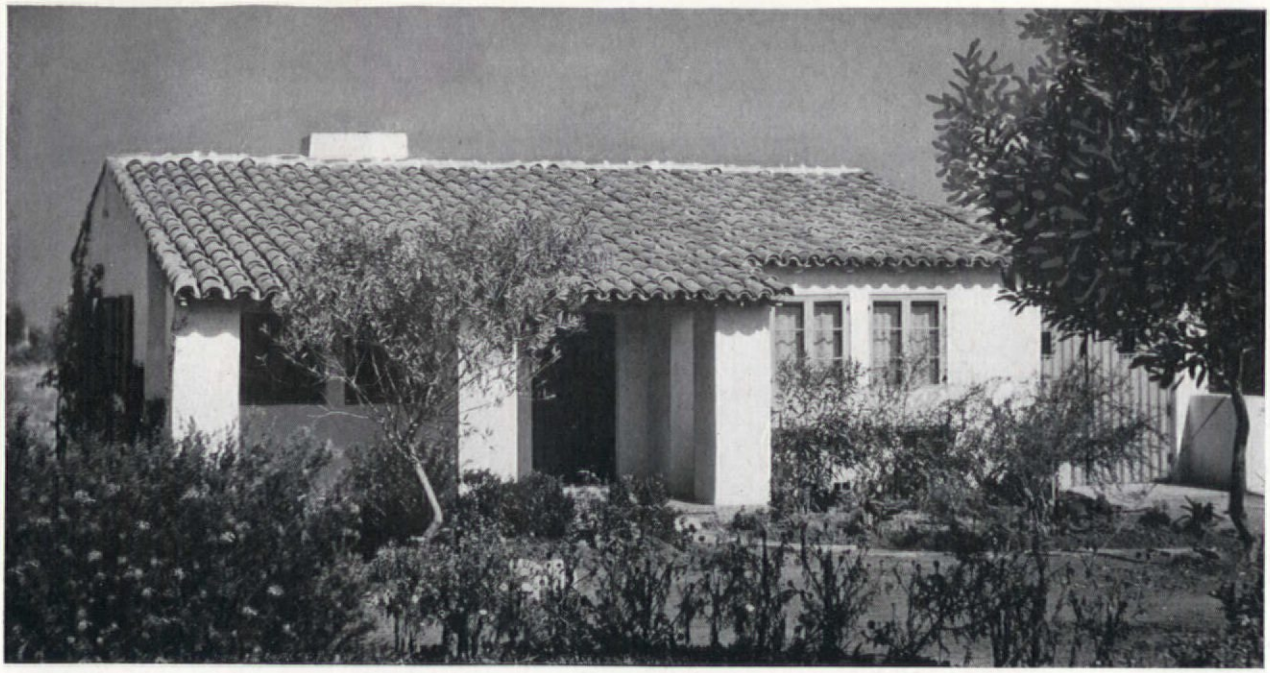
Haight

COTTAGE ON ESTATE OF WILLIAM R. DICKINSON
HOPE RANCH PARK, SANTA BARBARA, CALIFORNIA
REGINALD D. JOHNSON, ARCHITECT

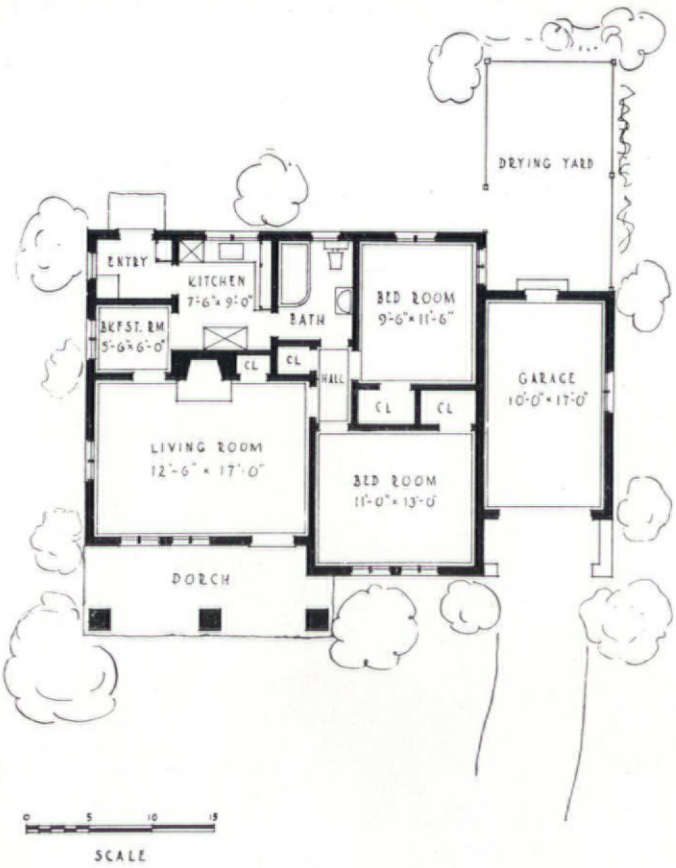
GOLD MEDAL
AWARD

BETTER HOMES
IN AMERICA
ARCHITECTURAL
COMPETITION
FOR 1930





SMALL HOUSE IN PALOS VERDES ESTATES, CALIFORNIA
H. ROY KELLEY, ARCHITECT

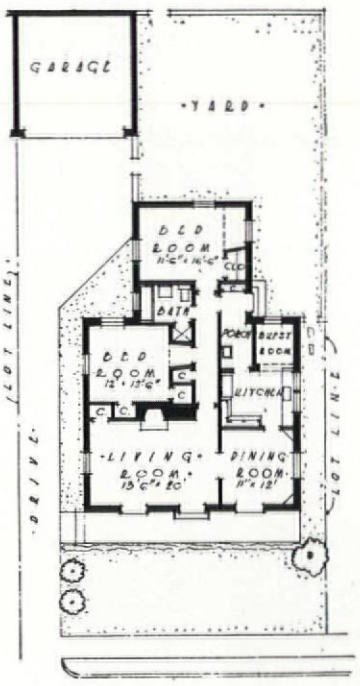


HONORABLE MENTION
ONE-STORY CLASS

BETTER HOMES
IN AMERICA
ARCHITECTURAL
COMPETITION
FOR 1930

Haight

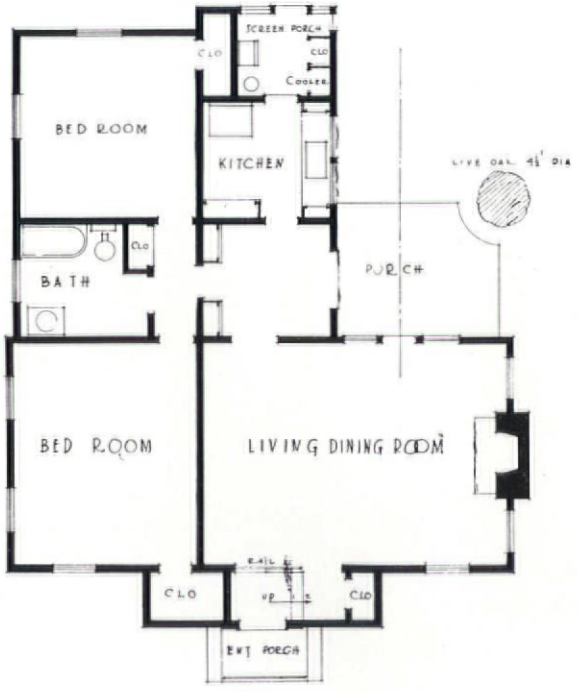
HOUSE IN LEIMERT PARK
LOS ANGELES
ROLAND E. COATE, ARCHITECT



HONORABLE MENTION
ONE-STORY CLASS

BETTER HOMES IN AMERICA
ARCHITECTURAL COMPETITION
FOR 1930

Haight



HOUSE OF MRS. M. P. McMURRAY
PASADENA, CALIFORNIA
DONALD D. McMURRAY, ARCHITECT

HONORABLE MENTION
ONE-STORY CLASS

BETTER HOMES IN AMERICA
ARCHITECTURAL COMPETITION
FOR 1930

Haight

HONORABLE MENTION—ONE-STORY CLASS
BETTER HOMES IN AMERICA ARCHITECTURAL COMPETITION FOR 1930

HOUSE OF MRS. M. P. McMURRAY, PASADENA, CALIFORNIA
DONALD D. McMURRAY, ARCHITECT

Haight

HOUSE OF MRS. M. P. McMURRAY, PASADENA, CALIFORNIA
DONALD D. McMURRAY, ARCHITECT

Meyers

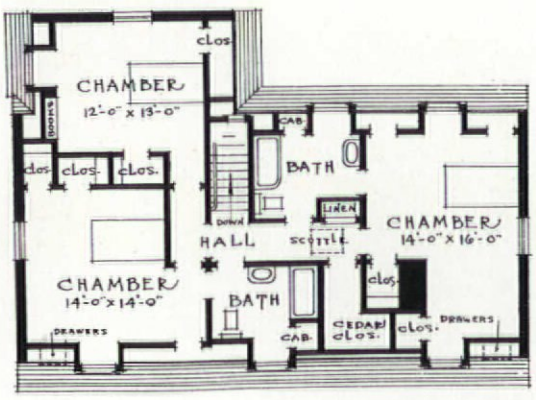
HOUSE OF STANLEY F. WITHE, SUNNYSLOPE FARM, COLLINSVILLE, CONN.
RAYMOND J. PERCIVAL, ARCHITECT

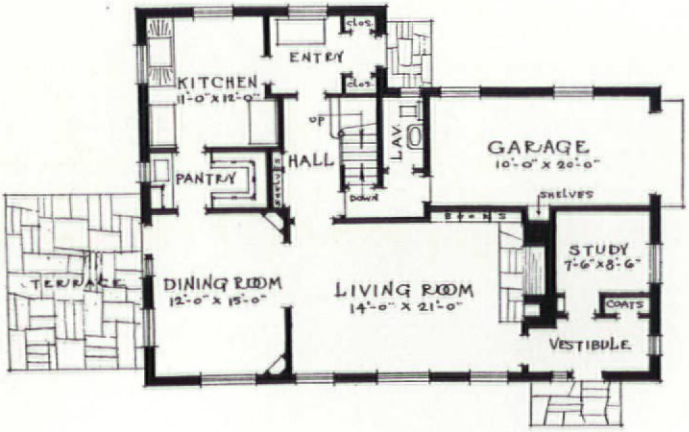
BETTER HOMES IN AMERICA ARCHITECTURAL COMPETITION FOR 1930

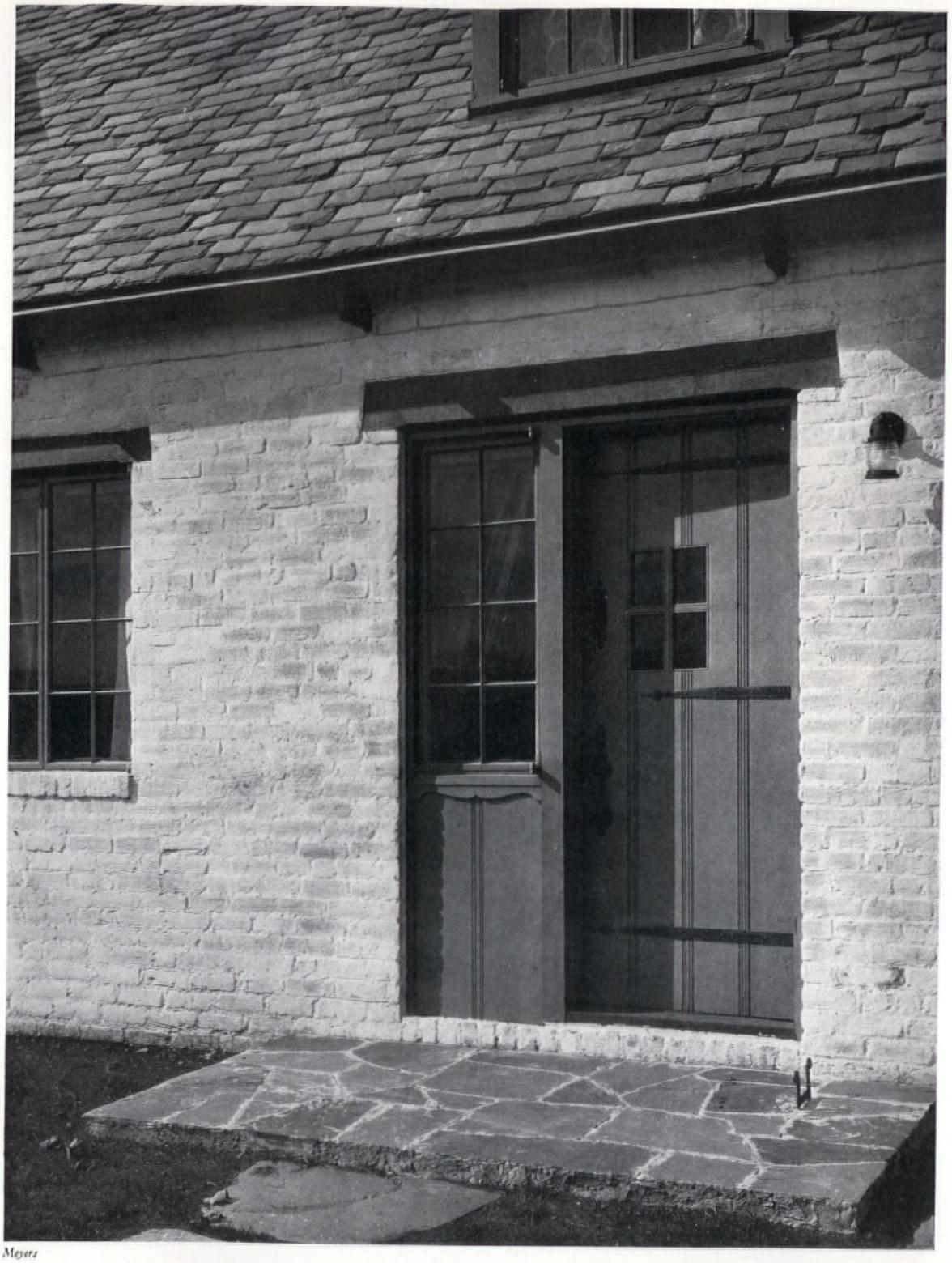
Meyers

HONORABLE MENTION—STORY-AND-A-HALF CLASS
BETTER HOMES IN AMERICA ARCHITECTURAL COMPETITION

HOUSE OF STANLEY F. WITHE, SUNNYSLOPE FARM, COLLINSVILLE, CONN.
RAYMOND J. PERCIVAL, ARCHITECT



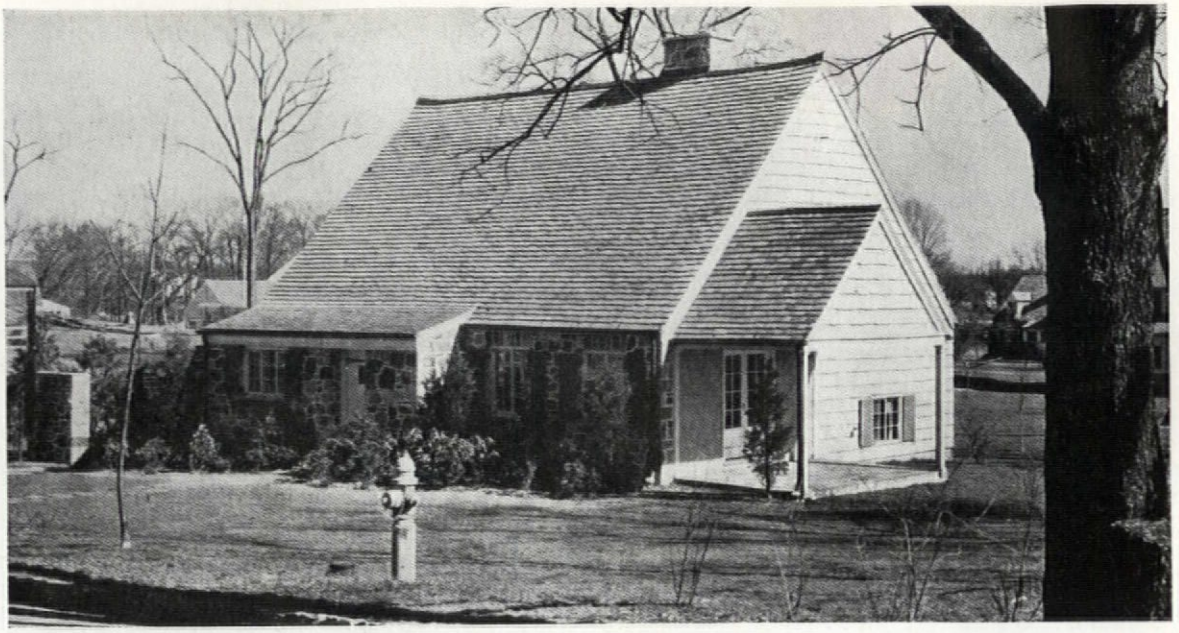




Meyers

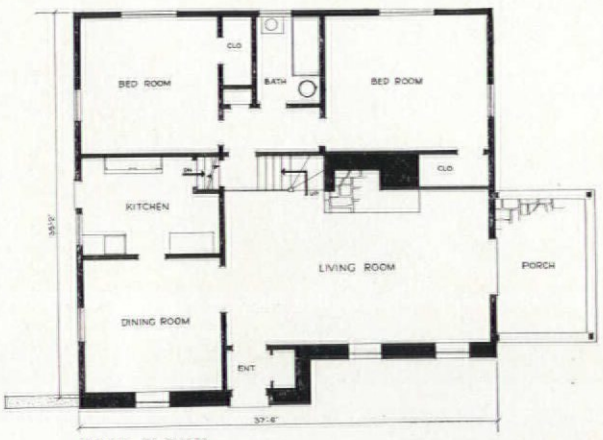
HONORABLE MENTION—STORY-AND-A-HALF CLASS
BETTER HOMES IN AMERICA ARCHITECTURAL COMPETITION

HOUSE OF STANLEY F. WITHE, SUNNYSLOPE FARM, COLLINSVILLE, CONN.
RAYMOND J. PERCIVAL, ARCHITECT

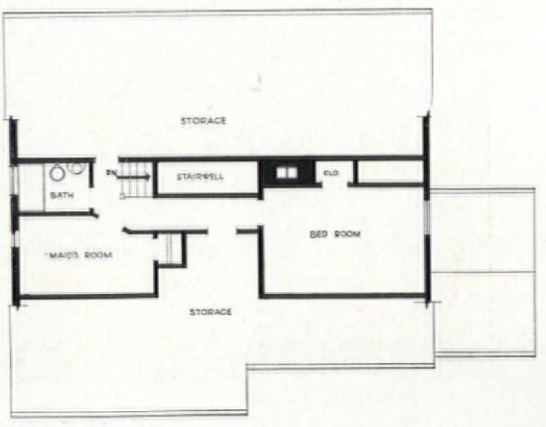


HONORABLE MENTION—STORY-AND-A-HALF CLASS
BETTER HOMES IN AMERICA ARCHITECTURAL COMPETITION

HOUSE OF RUSSELL HOYT, GREENWICH, CONNECTICUT
C. C. MERRITT, ARCHITECT



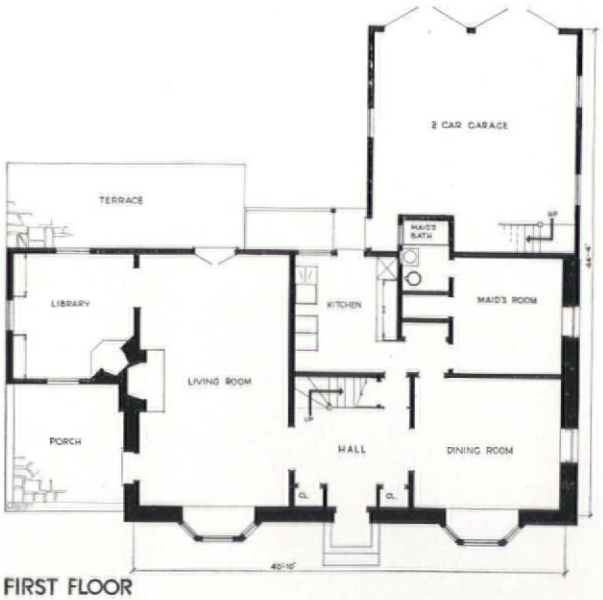
FIRST FLOOR



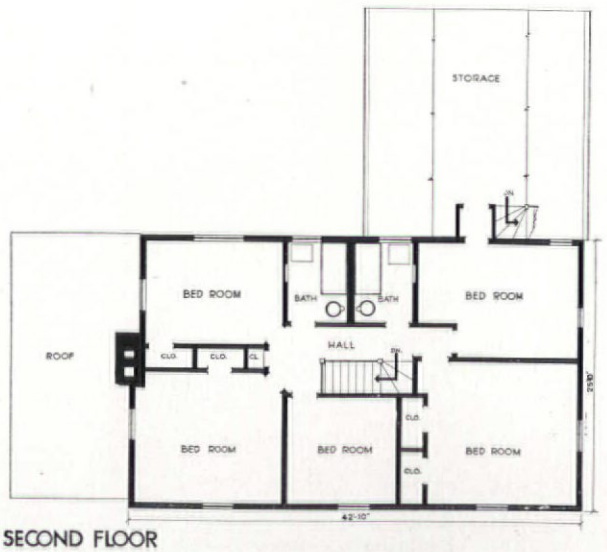
SECOND FLOOR

HONORABLE MENTION—TWO-STORY CLASS
BETTER HOMES IN AMERICA ARCHITECTURAL COMPETITION

HOUSE OF FRANK H. O'REILLY, GREENWICH, CONNECTICUT
C. C. MERRITT, ARCHITECT



FIRST FLOOR

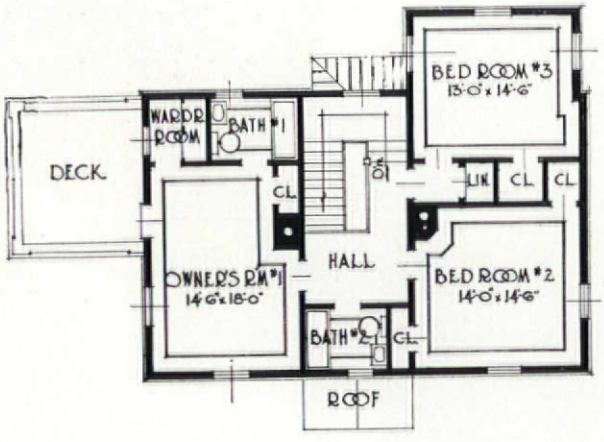


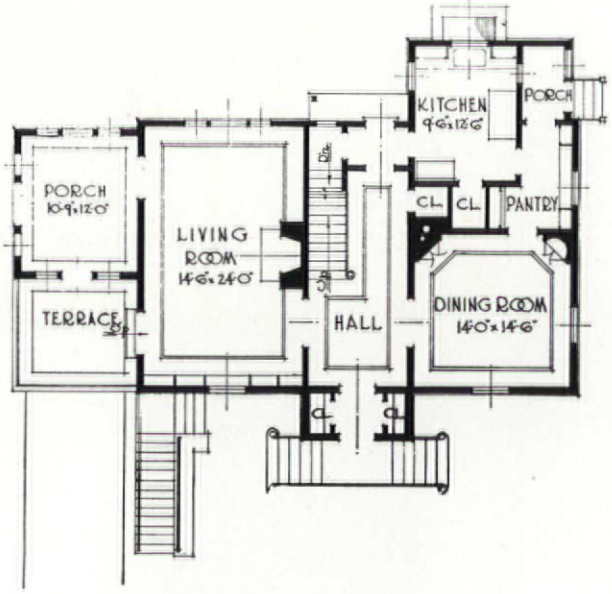
SECOND FLOOR

Gottscho

HONORABLE MENTION—TWO-STORY CLASS
BETTER HOMES IN AMERICA ARCHITECTURAL COMPETITION

HOUSE OF MISS ELIZABETH C. MALADY, FIELDSTON, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT





Gottscho

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Gottscho

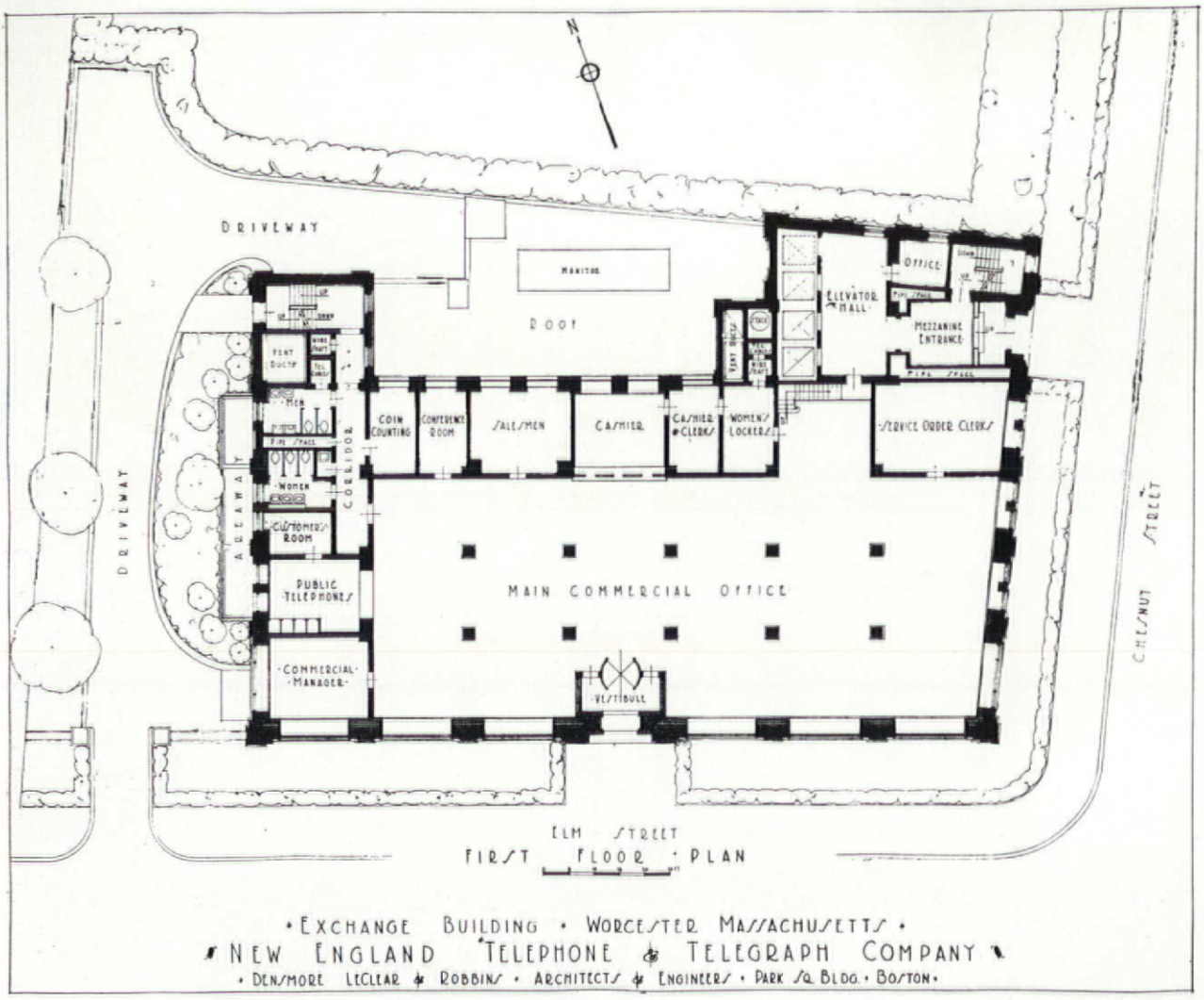
HONORABLE MENTION—TWO-STORY CLASS
BETTER HOMES IN AMERICA ARCHITECTURAL COMPETITION

HOUSE OF MISS ELIZABETH C. MALADY, FIELDSTON, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT

PORTFOLIO OF CURRRENT ARCHITECTURE

Weber

NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY
WORCESTER, MASSACHUSETTS
DENSMORE, LECLEAR AND ROBBINS, ARCHITECTS AND ENGINEERS



FIRST FLOOR PLAN

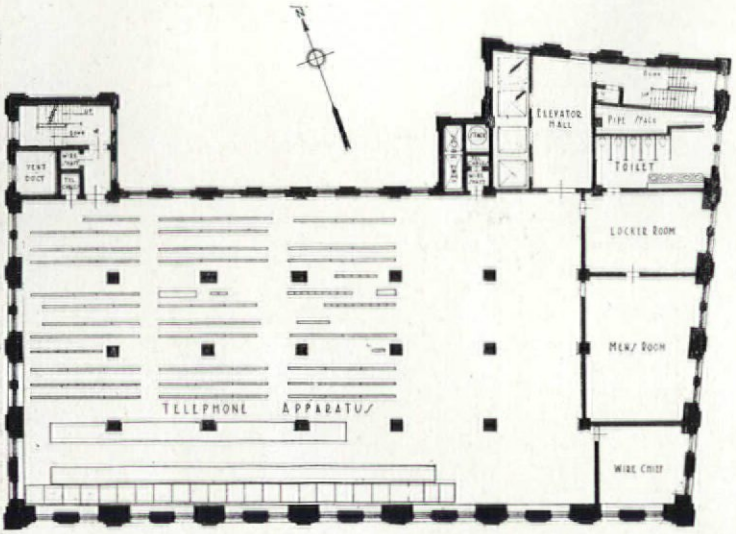
EXCHANGE BUILDING · WORCESTER MASSACHUSETTS

NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY

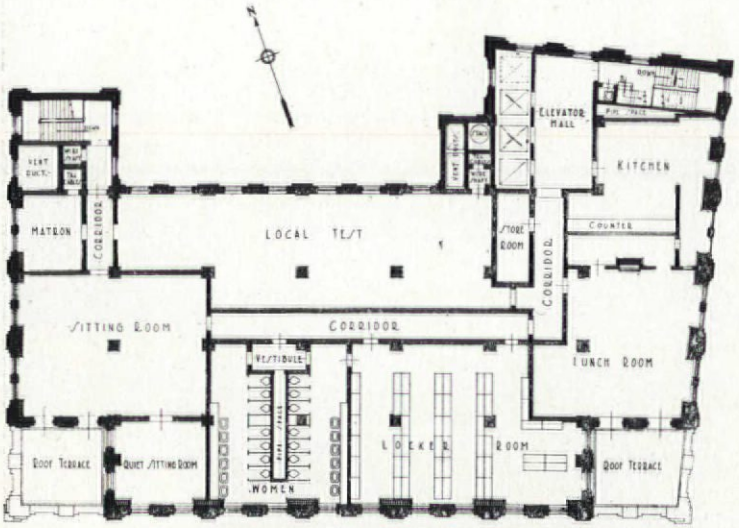
DENMORE LECLEAR & ROBBINS · ARCHITECTS & ENGINEERS · PARK SQ. BLDG. · BOSTON

Weber

NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY
WORCESTER, MASSACHUSETTS
DENSMORE, LECLEAR AND ROBBINS, ARCHITECTS AND ENGINEERS



Second floor plan.



Seventh floor plan.

NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY
WORCESTER, MASSACHUSETTS
DENSMORE, LECLEAR AND ROBBINS, ARCHITECTS AND ENGINEERS

Weber

NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY
WORCESTER, MASSACHUSETTS
DENSMORE, LECLEAR AND ROBBINS, ARCHITECTS AND ENGINEERS

Palmer Shannon

BANK AND OFFICE BUILDING
PHILADELPHIA SAVING
FUND SOCIETY

FIRST STUDY OF PROJECT
NOW UNDER CONSTRUCTION
RENDERING BY HUGH FERRISS

HOWE AND LESCAZE
ARCHITECTS

Palmer Shannon

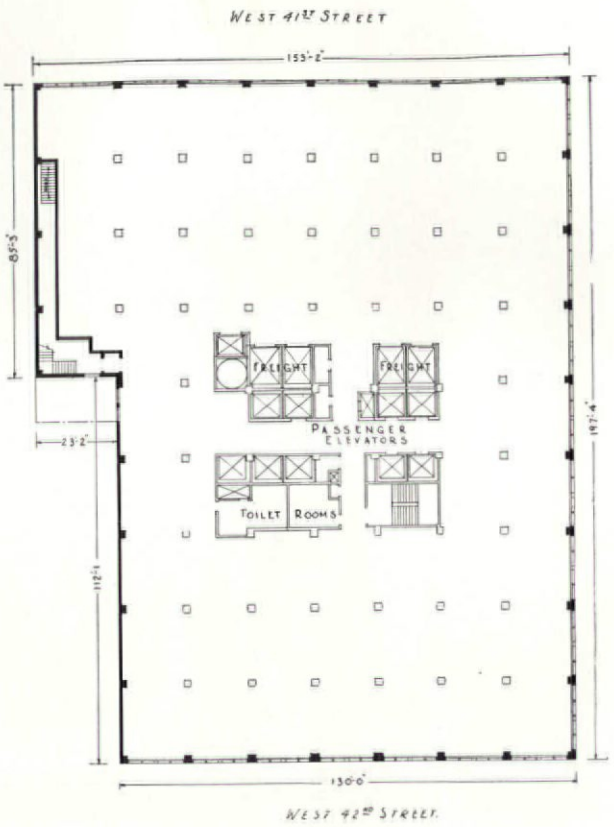
McGRAW-HILL
BUILDING
342 WEST 42ND STREET
NEW YORK CITY

CONSTRUCTION OF
THIS BUILDING
IS NOW UNDER WAY

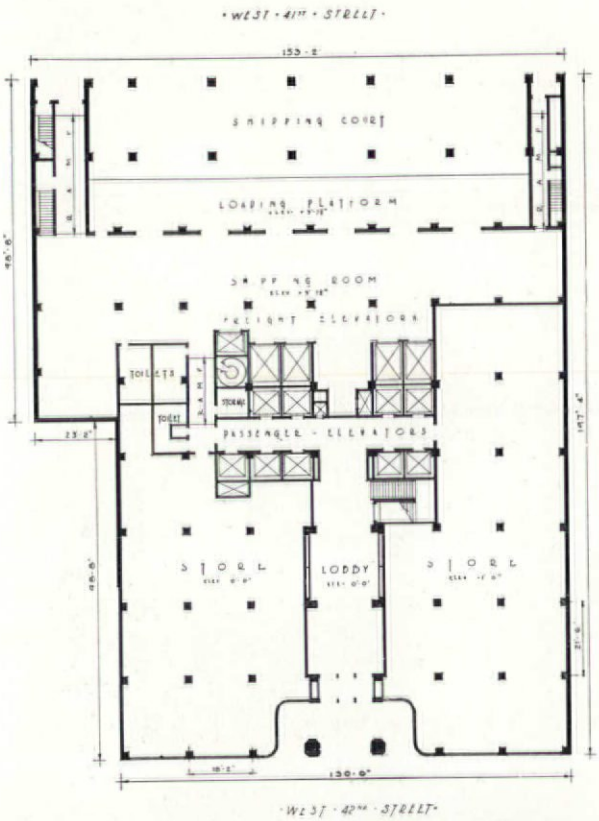
RAYMOND HOOD,
GODLEY AND
FOUILHOUX,
ARCHITECTS

McGRAW-HILL BUILDING
342 WEST 42ND STREET
NEW YORK CITY

RAYMOND HOOD, GODLEY AND FOUILHOUX
ARCHITECTS

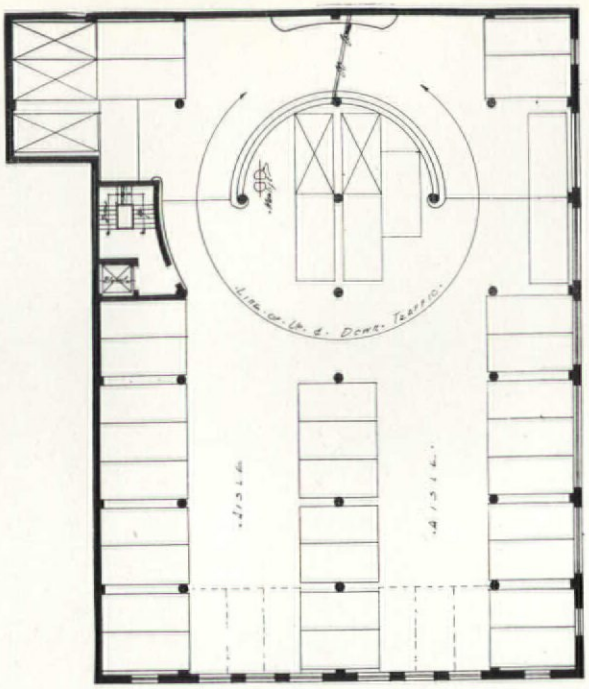


SECOND FLOOR PLAN

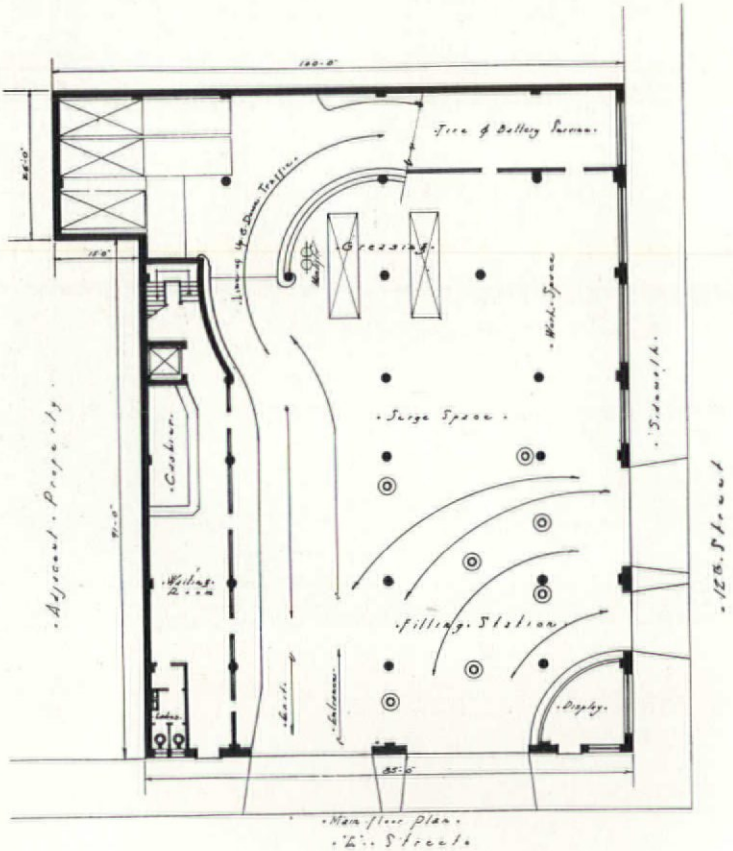


GROUND
PLAN

RENDERING BY LOUIS BALLOU
GARAGE AND SERVICE STATION, WASHINGTON, D. C.
LEE, SMITH AND VANDERVOORT, ARCHITECTS



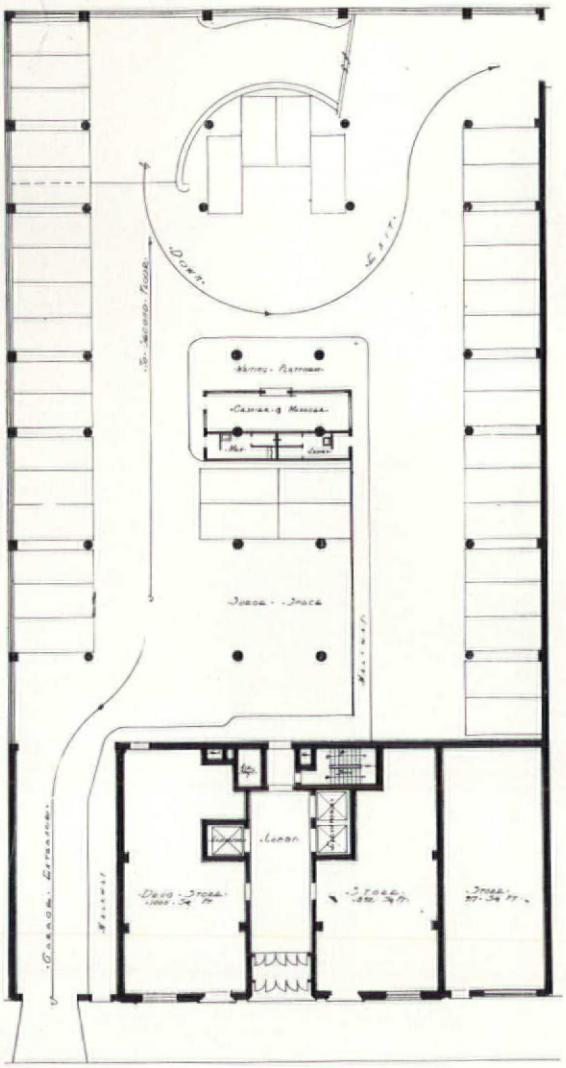
TYPICAL FLOOR
CAPACITY: 46 CARS



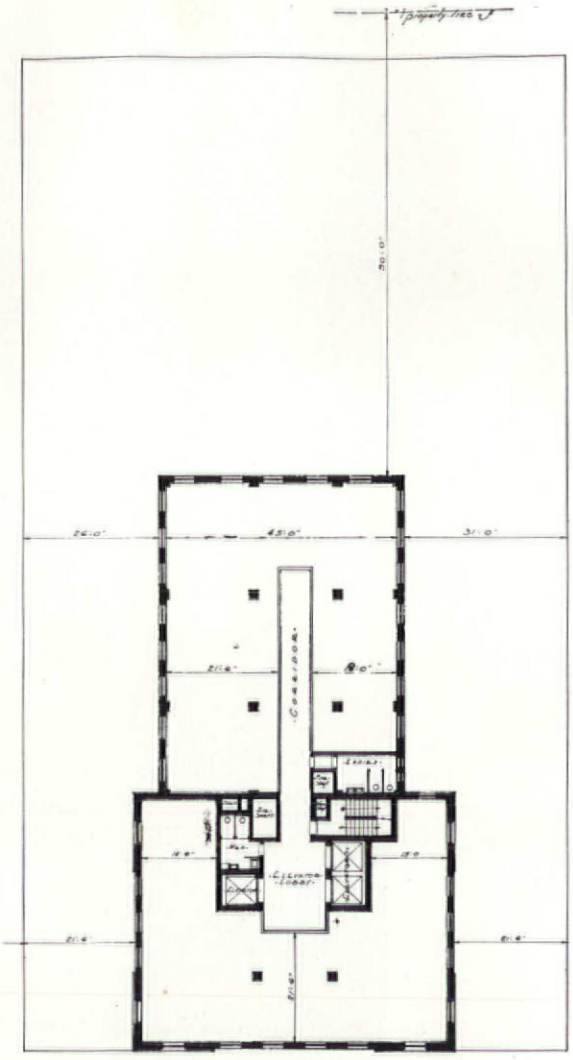
GARAGE AND FILLING STATION
WASHINGTON, D. C.

LEE, SMITH AND VANDERVOORT
ARCHITECTS

RENDERING BY LOUIS BALLOU
MEDICAL SCIENCE BUILDING, RICHMOND, VIRGINIA
LEE, SMITH AND VANDERVOORT, ARCHITECTS



FIRST FLOOR PLAN
GARAGE CAPACITY: 50 CARS
(SECOND FLOOR) 61 CARS

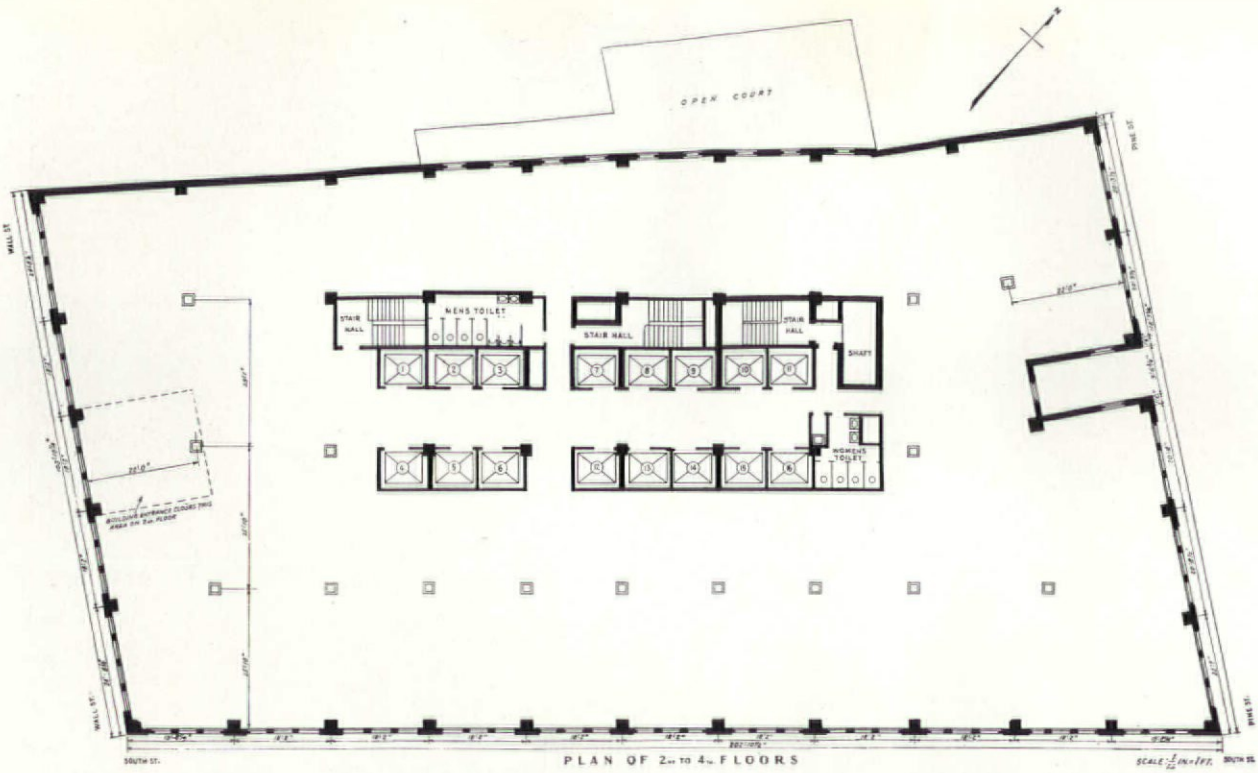


TYPICAL FLOOR PLAN
RENTAL AREA FOR OFFICES:
(11 FLOORS) 36,755 SQ. FT.

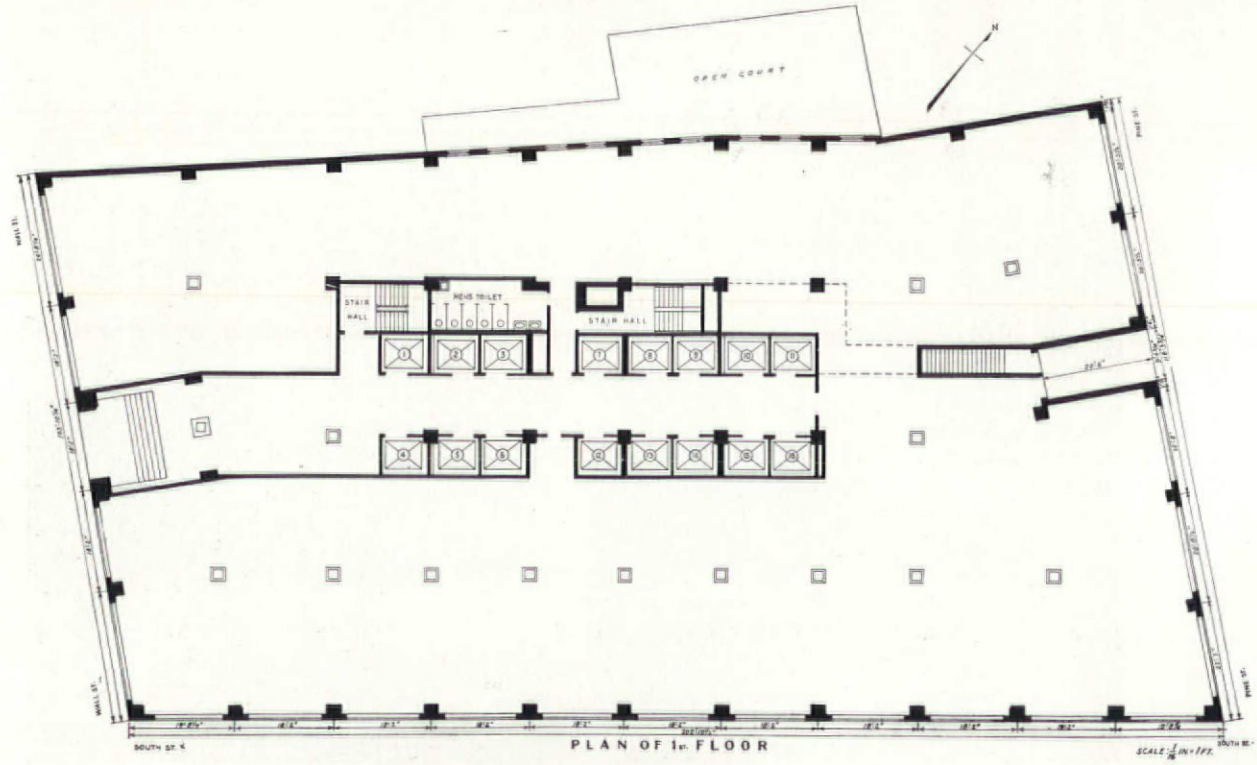
MEDICAL SCIENCE BUILDING, RICHMOND, VIRGINIA
LEE, SMITH AND VANDERVOORT, ARCHITECTS

Fischer

OFFICE BUILDING 120 WALL STREET
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT



PLAN OF 2nd TO 4th FLOORS



PLAN OF 1st FLOOR

OFFICE BUILDING AT 120 WALL STREET
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

Galloway

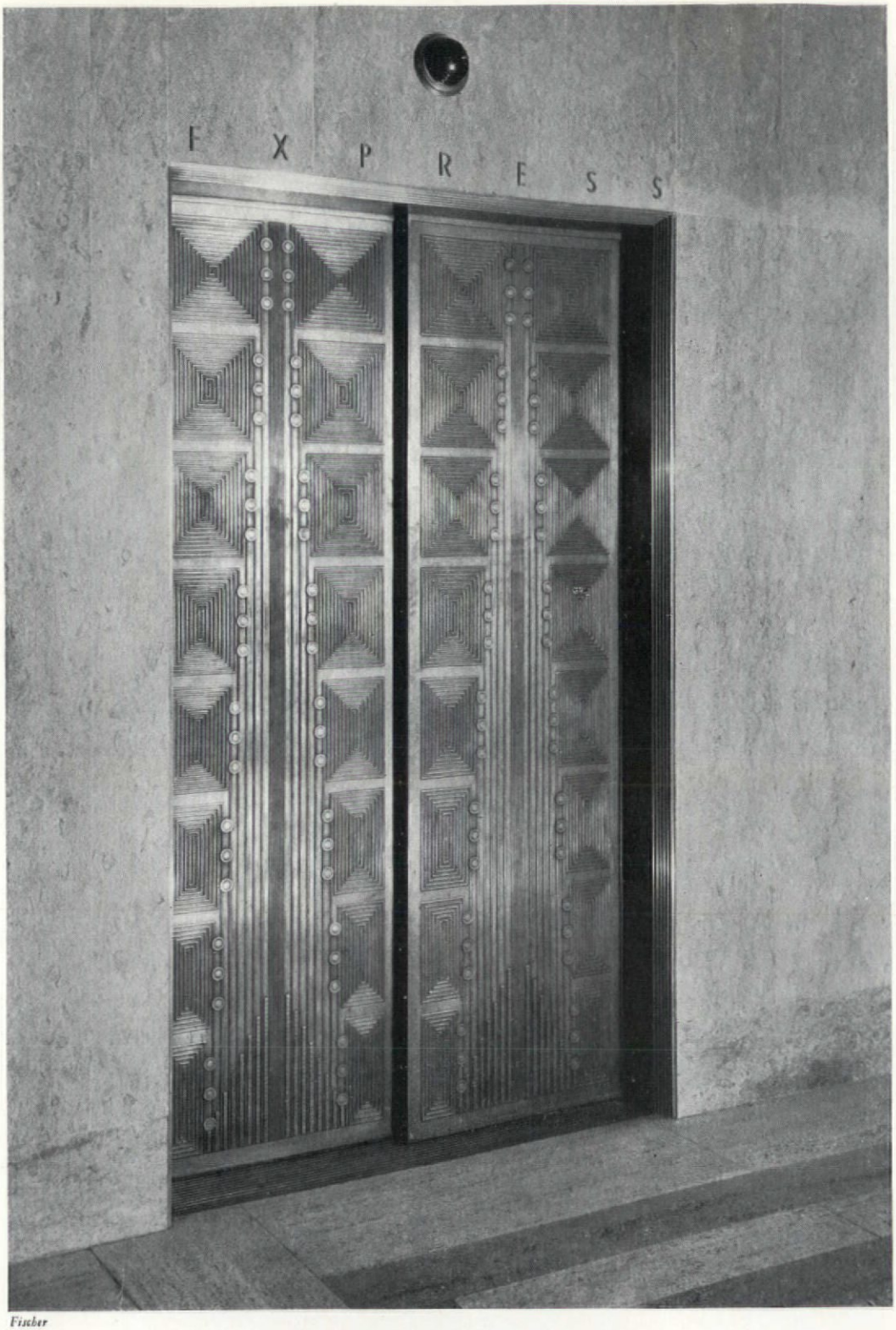
OFFICE BUILDING AT 120 WALL STREET
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

Fischer

OFFICE BUILDING AT 120 WALL STREET
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

Fischer

OFFICE BUILDING AT 120 WALL STREET
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT



Fischer

OFFICE BUILDING AT 120 WALL STREET
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

Fischer

OFFICE BUILDING AT 120 WALL STREET
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

Keystone

WORCESTER PRESSED STEEL COMPANY
WORCESTER, MASSACHUSETTS
JOSEPH D. LELAND & CO., ARCHITECTS & ENGINEERS

PLASTICS

The selection of the best plastic for a particular use is largely a choice between various manufacturers within a given type of plastic.

At the present time there are *three* basic types of plastic materials from which the architect will have to make his selection:

(1) *Phenolic Resin*, of which Bakelite is an example, is especially valuable for table tops and other uses where a material which will not be damaged by burning cigarettes is required.

(2) *Cellulose Acetate*, of which Lumarith is an example, is especially valuable for its unlimited variety of colors, varying in degrees of transparency; this material is not as resistant to burns as the other two plastics.

(3) *Urea Formaldehyde Resin*, of which Beetle is an example, combines to a modified degree some of the qualities of the other two plastics.

Cellulose Nitrate, of which Celluloid is an example, is not suitable for architectural uses on account of its inflammable quality. *Casein plastics* have not as yet found broad application in the architectural field on account of the tendency to absorb moisture. The various *asphaltic* and *gum plastics* have not yet been developed for general architectural uses, although experimental work is being conducted at the present time which may result in a usable material at low cost.

FORMS AVAILABLE

These plastics are available in a wide variety of molded forms and tubes, rods and sheets. The molded forms include such products as switch plates, door knobs, escutcheons, kick and push plates, telephone sets, toilet articles, electrical appliances and various types of moldings. The article is given its form in a mold (or die) under heat and pressure. With the cellulose products, as there is no chemical change in the molding process, the material may be remolded if again subjected to heat and pressure. With the resins there is a chemical reaction during the molding process which gives the material a permanent set.

The sheet products of phenolic resin (except *catalin*) are composed of laminated paper, canvas or linen which has been impregnated with a resin solution and formed into a homogeneous mass by the application of heat and pressure. For architectural purposes thin sheets of this material are frequently cemented to a base of wood ply board, insulating board or asbestos board. For table and counter tops, the ply board is generally surrounded on all sides by plastic material. Cellulose products may be obtained in sheets up to 21″ x 50″. The maximum size sheet which can be obtained for the phenolic resins depends on the manufacturer. Spauldite maximum size is 38″ x 49″. Formica may be obtained in sheets 3 x 7 feet and in some cases 3 x 10 feet, although cretonne and tapestry finishes are limited to 2′ 6″ widths.

STORE FRONT OF POLISHED BLACK FORMICA, WABASH AVENUE, CHICAGO. DESIGNED BY NELSON AND NOVOTNY COMPANY

COLORS AND FINISHES

Phenolic resins panel stock may be obtained in a wide variety of finishes but the tendency to date has been to imitate existing materials such as marble and wood; a process of color printing has been developed which produces surface photographic effects. Various types of colored canvas can be used in the manufacture of laminated sheets. Manufacturers are willing to make up such sheets where a fairly large quantity of the material is desired. This type of wall covering would be especially advantageous for rooms where frequent washing of the walls is desirable. The phenolic resins generally come in two finishes, satin and high gloss. The satin finish has the same appearance as the finest hand-rubbed varnished finish. The high gloss finish is equal to that of highly polished glass or marble.

The cellulose group materials have a wider range of color effect than the phenolic resins. Cellulose acetates may be obtained in pure white, mother of pearl, ivory and various mottled effects of light tints. The cellulose plastics come in high gloss and satin finish.

RESISTANCE TO SCRATCHING

The plastics are somewhat more resistant to scratching than a varnished surface; when scratched, the mark can be removed by rubbing with pumice stone.

ARCHITECTURAL USE OF PLASTICS

CHEMICAL CONSTITUENTS	CELLULOSE NITRATE	CELLULOSE ACETATE	UREA FORMALDEHYDE RESINS	PHENOLIC RESINS	
TRADE NAMES	Celluloid, Amerith, Fiberloid, Nixonoid, Pyralin, Lucite	Lumarith, Plastacele, Rhodoid, Masuron	Aldur, Beetle, Luxite	Bakelite, Durez, Indur, Makalot, Durite, Formica, Micarta, Panelyte, Spauldite, Textolite and others	Catalin
FORM	Molded products—tubes, rods and sheets.	Molded products—tubes, rods and sheets.	Molded products—tubes, rods and sheets.	Molded products—tubes, rods, paper and fabric sheets (with filler).	Cast products — rods, sheets, tubes or special castings (no filler).
PRINCIPAL CHARACTERISTIC	Inflammable.	Variety of color. Less inflammable than cellulose nitrate, but will support combustion. Valuable for electrical insulation.	Stands hot water. Chars but will not support combustion.	Not damaged by burning cigarettes. Stands 300 deg. Fahr. Valuable for electrical insulation.	Non-inflammable; chars but does not burn. Valuable for electrical insulation; stands 350 deg. Fahr. without discoloration.
SUITABLE FOR	Hardware, wall panels, and decorative purposes; not for table tops.			Panels for interiors, store fronts, table tops, restaurant counters, hardware, toilet seats and electrical work.	Panels for interiors, counters, etc., hardware, bathroom fittings, lamps, lighting fixtures and electrical work.
COLORS and EFFECT OF SUNLIGHT	Unlimited colors. Mottled effects; but colors obtained from dyes will fade in direct sunlight. Mineral pigments will not fade.			Wide variety; but the light-colored material tends to turn yellow when exposed to direct sunlight or ultraviolet light. Best to use only in darker shades.	Large variety of transparent, translucent, and opaque colors. Colors obtained from dyes will age in direct sunlight; mineral pigments will not fade.
TRANSPARENCY	Opaque, translucent and transparent.		Not transparent.	Opaque only.	Transparent, translucent, opaque.
EFFECTS OF WATER—Cold;	Slight swelling.	Slight swelling.	None.	None.	None.
—Hot;	Swells and softens.	Swells and softens.	None—(used for coffee cups).	Some deterioration on long immersion.	Softens above boiling point.
EFFECT OF ALCOHOL	Softens.	Spots.	Not affected.	Not affected.	None.
EFFECTS OF ACIDS—Weak;	None.	Slightly attacked.	None.	Presence greatly decreases water absorption resistance.	None.
—Strong;	Decomposed.	Decomposed.	None.	Decomposed by HNO_3, H_2SO_4; and by HCL and H_2F_2, which attacks fillers.	None.
EFFECTS OF ALKALIES —Weak;	None.	Slightly attacked.	None.	Slowly softens, except special grades.	None.
—Strong;	Decomposed.	Decomposed.		Disintegrates.	Slightly attacked.
EFFECT OF ANIMAL AND VEGETABLE OILS	None.	None.	None.	None.	None.
EFFECT OF HEAT	Decomposes 100 to 150 C.	More stable than Cellulose Nitrate.	Offensive odor at 200 deg. Fahr.	Withstands 300 degrees Fahr. without hardening and shrinkage.	Odorless; stands 350 deg. Fahr.
THERMAL CONDUCTIVITY B.t.u. per sq. ft. 1" thick per 1 deg. Fahr.	.9—1.5	1.6—1.7	.....	1.2—2.3	1.25 to 1.8
SOFTENING POINT-Deg. Fahr.	160—195	160—250	None.	None.	None.
APPROXIMATE COSTS PER SQ. FT.	Sheets 1/32" $.20 Veneer 1/32" on one side of insulating bd. .30 Two sides of insulating bd. 3/8" .50 Two sides 3/8" .55 Two sides 3/4" .60 Two sides 1/4" asbestos bd. .55	Sheets 1/32" $.40 Veneer 1/32" on one side of insulating bd. .50 Two sides of 3/8" insul. bd. .80 3/8" insul. bd. .85 3/4" insul. bd. .90 1/4" asbestos board .85		Laminated paper filler 3/16" $.55 Laminated fabric filler 3/16" .65 Veneer 3/16" two sides of 1/8" insulation board .80 3/8" insulation board 1.25 3/4" insulation board 1.35 1/4" asbestos board 1.25 3/8" asbestos board 1.35	Sheets 1/8" $.85 3/4" 1.70
COMPANIES PRODUCING PLASTIC MATERIALS	Celluloid Celluloid Corp. Fiberloid Fiberloid Corp. Pyralin DuPont Viscoloid Co. Nixonoid Nixon Nitration Works	Lumarith Celluloid Corp. Masuron John W. Masury Plastacele DuPont Viscoloid Co.	Beetle Synthetic Plastics Co. Aldur Aldur Corp. Luxite Wilbur & Williams	Bakelite Bakelite Corp. Celoron Continental Diamond Fibre Co. Durez General Plastics Inc. Makalot Makalot Corp. Textolite General Electric Co. Durite Stokes and Smith Co. Formica Formica Insulation Co. Spauldite Spaulding Fibre, Inc. Micarta Westinghouse Electric Panelyte Panelyte Co.	Catalin American Catalin Co.

REAL ESTATE SUBDIVISIONS FOR LOW-COST HOUSING

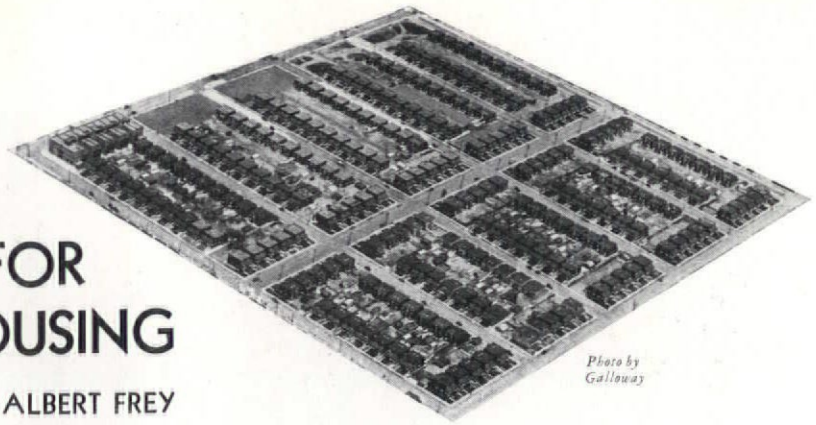


Photo by Galloway

By A. LAWRENCE KOCHER and ALBERT FREY

The small lot on near-metropolitan areas exists as an economic necessity. Its size is determined by what the public will (not what they should) buy. The purpose of this study is to present a method for improving the shape and use of the minimum size lot for low-cost housing.

SMALL LOTS NECESSARY

The typical demand for small single-family houses in the environs of New York is shown by the thousands of small houses on extremely narrow lots that have been sold in the Borough of Queens during the last six years. "These houses, some of flimsy construction, and all built in monotonous rows on narrow lots, with most street improvements lacking and with no provision for community life or for parks and playgrounds, are but a sorry makeshift as a solution of the housing problem."* The sales price of these houses ranges from $4,800 to $7,500. On Sundays and holidays there are hundreds of prospective buyers attracted to these projects. They are attracted by what represents the minimum price as much as by the cherished desire to own a house.

In order to compete with speculative builders and realtors, architects *must* accept the minimum size lot as an economic necessity for lowest cost housing. They should, however, devise a method for improving the use of small lots. Small house construction can be stimulated at this time by (1) an improved arrangement of minimum size plots; (2) a more economical and desirable house plan; (3) greater use of factory-made parts in order to reduce erection costs.

*Regional Survey of New York and Its Environs, Vol. VII, p. 354.

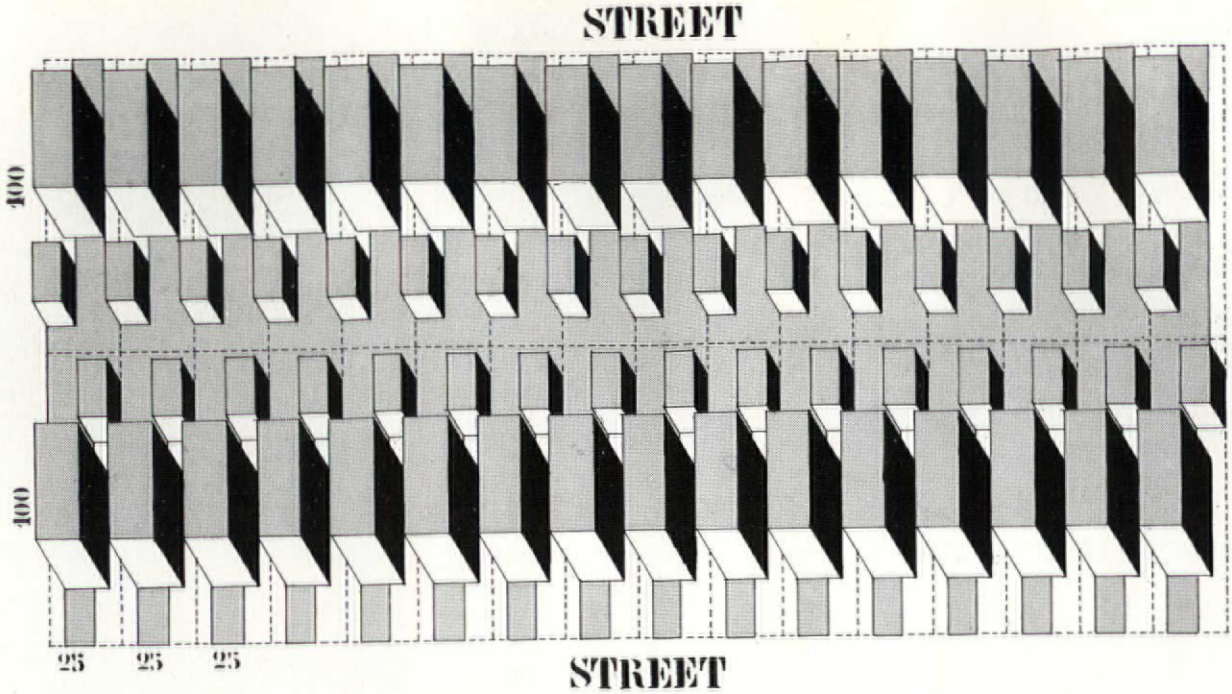
LOT SHAPES AND HOUSE TYPES

A scheme is proposed in the following pages which makes use of plots that are square in shape. In place of the 25 by 100 foot lot, a similar total area, 50 feet by 50 feet, is suggested. Instead of houses placed in rows, there is a staggered placement of houses that insures reasonable privacy, preserves a large garden space, greatly reduces the fire hazard and insures an abundance of direct sunlight.

The house plan includes a living room, combined kitchen and dining room, porch, roof terrace, three bedrooms and bath. Living rooms are on the upper floors with all windows toward the garden. Blank walls front streets and neighbors. There is no excavated basement but provision is made on the ground level for a garage, laundry and storage space. By locating the garage within the ground area of the house, there is no encroachment on the garden space, other than by driveway. The auto drives for four houses may be combined as one.

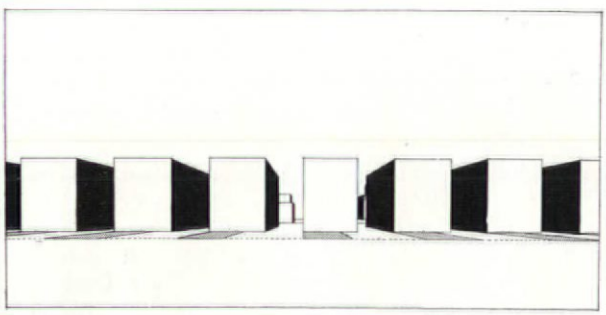
COSTS

Houses that sell for $5,000 and upward are, in most localities, a "drug on the market." They are more costly than the vast potential home buying public can afford. Investigation, however, should be made of means whereby costs can be lowered by the production of houses in groups and by a greater use of building parts produced by industry that will contribute toward the elimination of slow, antiquated and inefficient building methods.

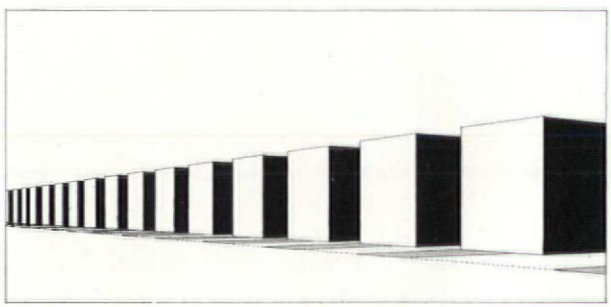


Row Houses on narrow, deep lots are undesirable because:

House plans are narrow and deep.
Space between houses is too limited.
Little light and sunshine admitted by side windows.
No privacy.
Fire danger.
Monotonous repetition of similar shapes.
Garden space divided.
Garages at rear are difficult of access.



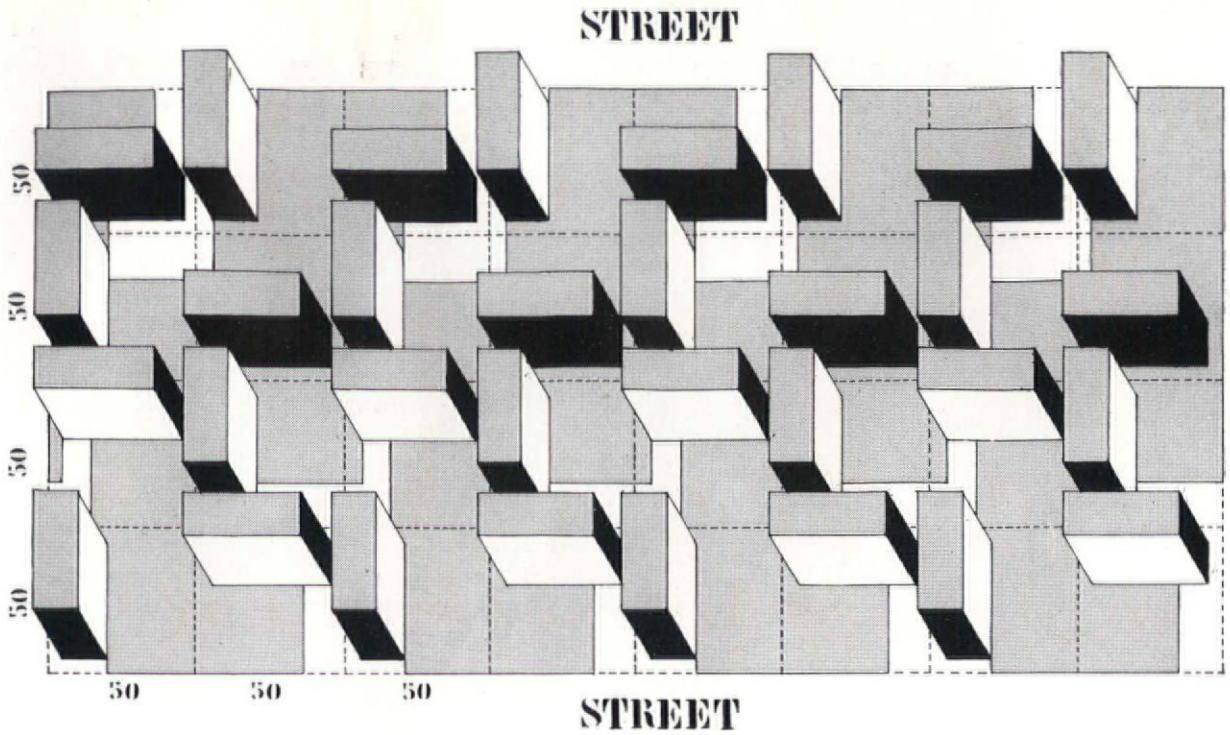
Front appearance of narrow row houses shown schematically, illustrating the close spacing.



View along street showing monotony of repeated masses with absence of individuality.

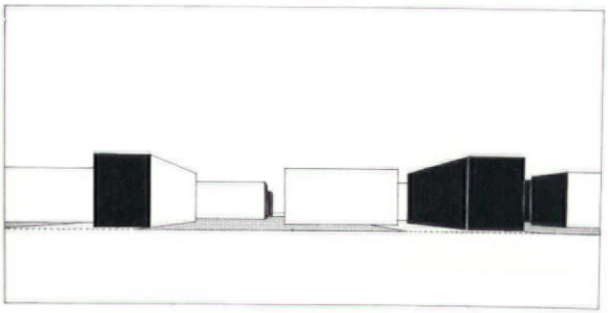
Typical row houses as shown in diagrams above.

Houses arranged in soldier courses.

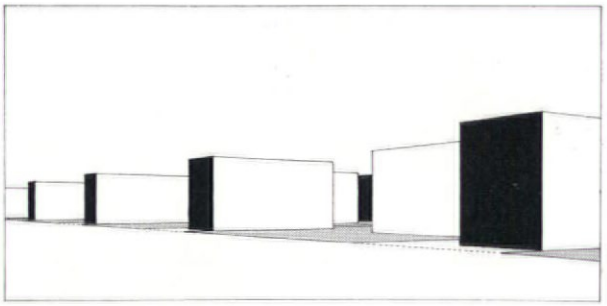


Improved subdivision with same area and number of houses shown on opposite page:

(Black indicates blank walls.)
Houses are wide and shallow.
Broad garden area is at side of house.
All windows are at side toward garden.
There is attractiveness and individuality in grouping.
There is unobstructed sunlight and privacy because of wide spacing and staggered arrangement.
Garage included in cube of house.
One driveway serves four houses with minimum encroachment on garden area.



Front view showing wide and open spacing on plots 50′ x 50′.

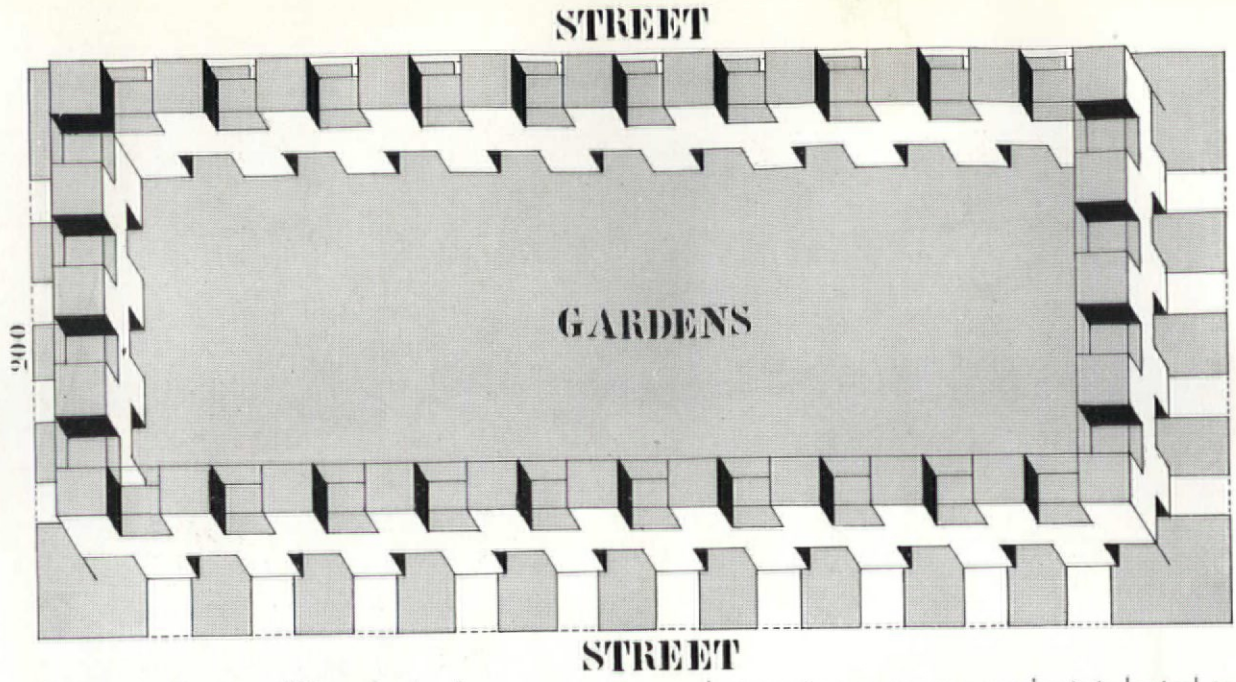


Elimination of monotony by "staggered" arrangement. Houses on street are 100′ on centers.

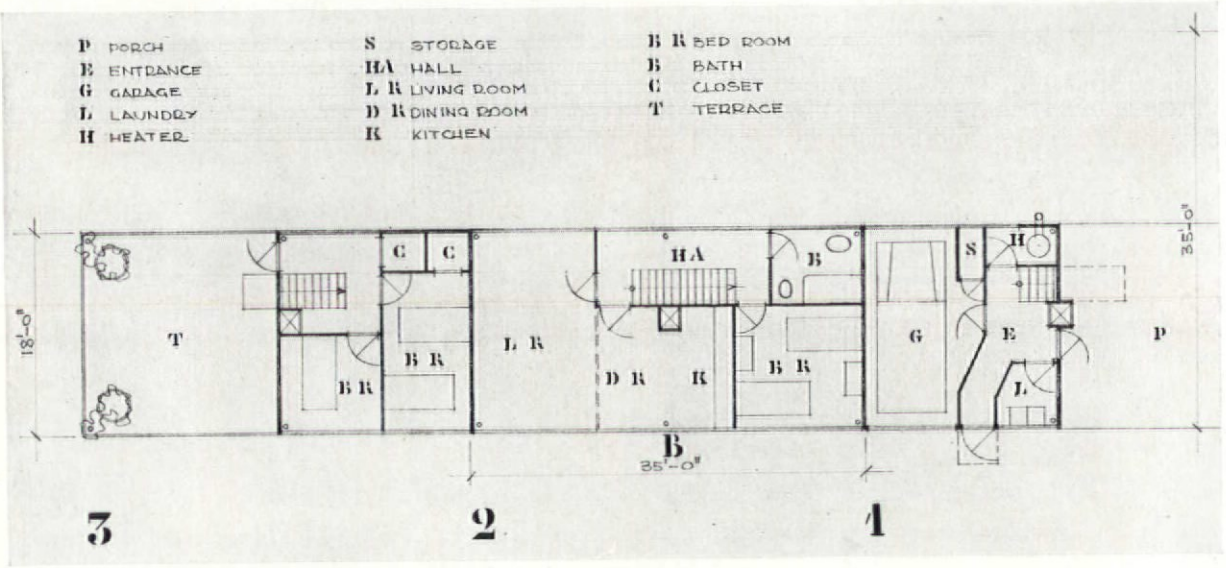
The houses illustrated at right, in Forest Hills Gardens, Long Island, Wilson Eyre, architect, are made attractive by their staggered grouping.

The real estate subdivision with low-cost houses may be given a similar setting by arrangement suggested on this page. The entire block may be treated as a garden.

An actual example of scheme proposed above.



Continuous houses. Where land values are excessive and recreation areas are nearby it is logical to accept the continuous arrangement. Open porches on the ground floor penetrate the row and establish a relation between street and garden. Free passage of air is admitted to the garden court. Each house is provided with a roof terrace overlooking the garden.

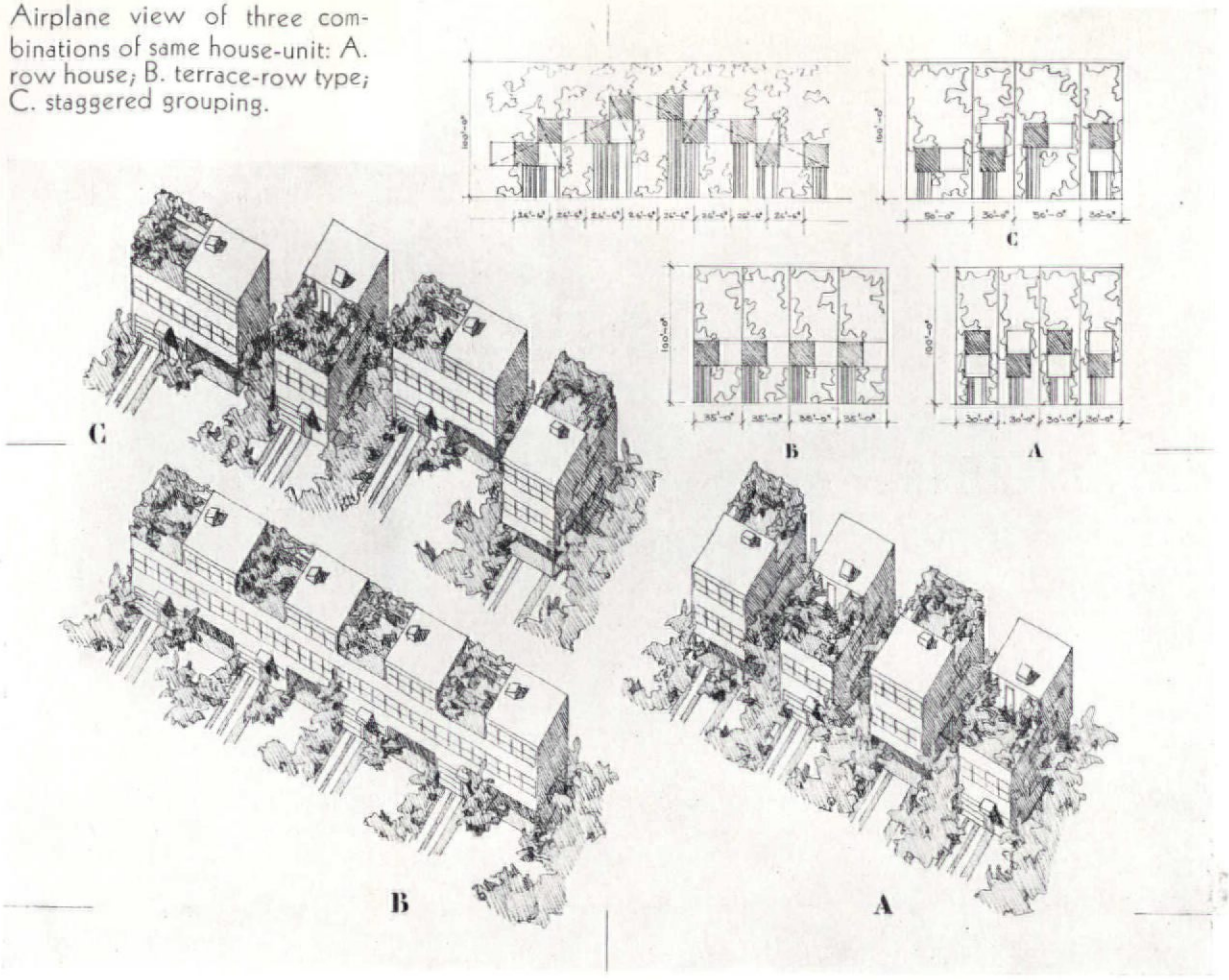


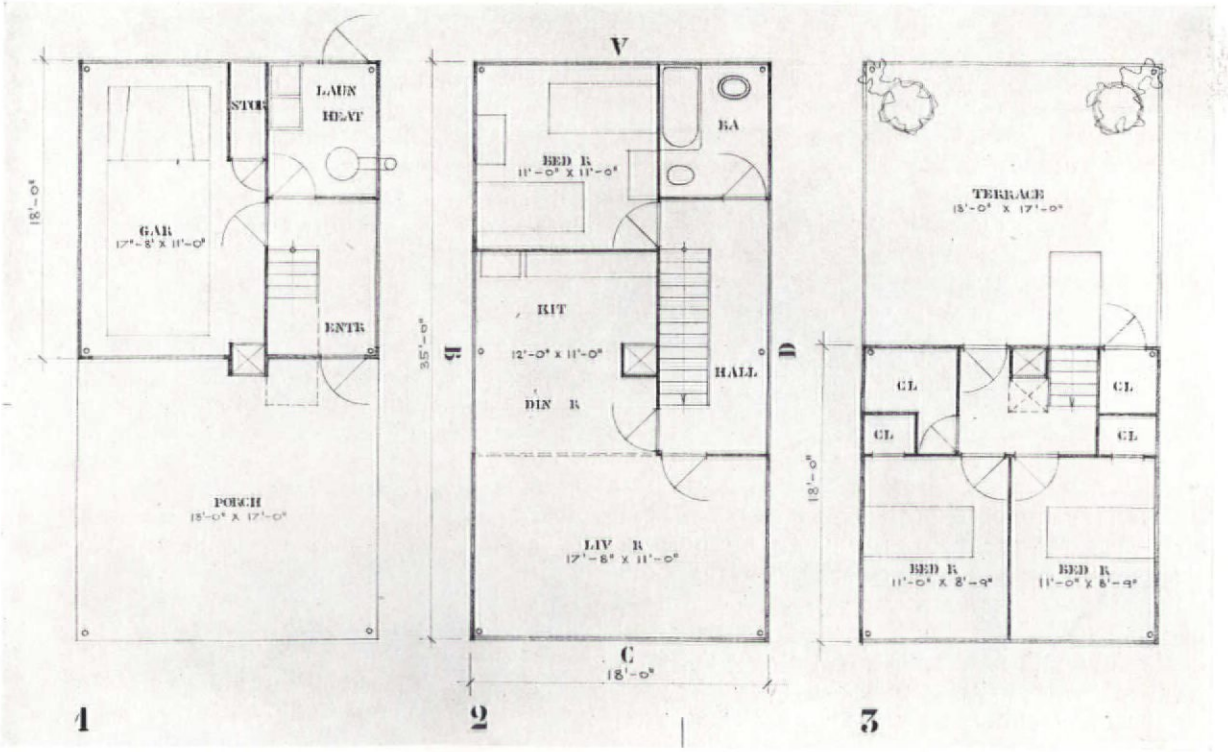
Proposed floor arrangement for above scheme.

Typical and undesirable continuous houses showing pretentious (false) fronts and a depressing side toward the court.

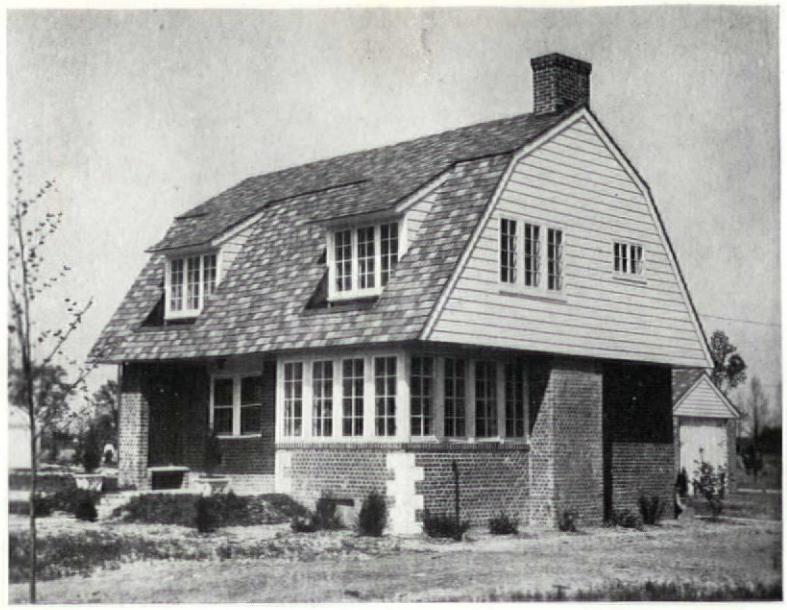
The housing scheme on opposite page is intended for the small lot subdivisions that exist where land values are high. The characteristic feature of this house scheme proposed is the location of ground porch and roof terrace at opposite ends. This makes it possible to obtain, simultaneously, sunshine or shade. When placed in rows as single houses the position of terrace and porch alternates, giving privacy between blank walls of neighboring houses. Windows of living and sleeping rooms face to front and rear. The area occupied by the house is regained for outdoor living space by roof garden and inside porch.

Airplane view of three combinations of same house-unit: A. row house; B. terrace-row type; C. staggered grouping.





Plans of unit house.



ONE OF THE SEVEN HOUSES BUILT AND SOLD AT EASTON, MD., BY W. D. BRINCKLOE, ARCHITECT

AN ARCHITECT DEVELOPS HIS OWN BUSINESS

To the Editor:

Perhaps you might be interested in something which I have been doing along the line of Real Estate Developments.

Easton, Maryland, is a little country town of 4000; several hours away from the nearest city. Talbot County, however, has very beautiful waterfronts; these sites have brought here a number of city folk, including myself.

A year ago, one of these "immigrants" suggested to me the idea of building about 20 small houses on a very attractive piece of property, just within the town limits. "Let's have brick walls and tile roofs," he said. "I believe it's possible to sell houses on the basis of *quality*, rather than *price;* in other words, our sales-talk will be that the purchaser will save money, because there won't be any repairs or repainting."

So we formed a partnership; he supplied the money and I supplied the plans and supervision. We built seven houses, varying from 5 rooms to 7 rooms, every one entirely different in both design and plan. Because of the low wages which are paid in all rural districts, we built these houses, all complete, by contract, for prices ranging from $5200 to $6500. These prices included steam heat, hardwood floors, tiled bathrooms, garages, etc. The 60-foot lots were put in at $900 apiece, including sidewalks, etc.; shrubbery and trees cost $50. Incidentals came to about $100 more. Profit was $500—half for the partner, half for my services. He is a wealthy man; therefore he financed the whole thing himself. The purchaser pays $500 down and from $45 to $60 per month, depending on the cost of the house. This takes care of interest and pays off the principal at the rate of about $200 per year. At the end of five years the monthly rate drops, decidedly; and the remainder of the mortgage can either stay more or less indefinitely, or be paid off fairly rapidly, as the purchaser elects.

Though my share does not quite equal full 6% commission, the volume of work makes it worthwhile; especially as much of it can be done in the dull season. My partner gets a thoroughly safe 6% investment for his money besides a small additional profit.

The results have been thoroughly satisfactory. Of the seven houses already built, five are sold; and the two remaining ones will no doubt go very soon. At first, we built houses entirely on speculation; but now that the development is a success, we will only build on order.

You will notice several very unusual features about all this:

1. The development was put through in a small town, so far from any city that the "commuter" market didn't exist.
2. Instead of using the cheapest materials possible, we used the very best.
3. Every house was designed by itself; there was no duplication whatever.
4. Unlike all other developments, neither a realtor nor an operative builder had anything to do with it; the man who put it through was a retired capitalist, associated with an architect.
5. In a time when the national real-estate market was absolutely flat, we sold our houses without cutting prices one cent.

Very truly yours,

(Signed) WILLIAM DRAPER BRINCKLOE,
Architect

REMODELING ARCHITECTS CAN DEVELOP BUSINESS BY SEEKING OPPORTUNITIES FOR REMODELING DWELLINGS AND RECONDITIONING CITY AREAS

The client purchased a typical large "hotel cottage" of the type prevalent in the early nineties well situated on a wooded slope overlooking Shelter Island Harbor. The house had heavy overhanging eaves, a one-story porch running around three sides and much "gingerbread" ornament and fretwork.

First it was decided to move the house 50 feet farther from the road which separated it from the water, and turn it 90 degrees around so that the length of the living room and the main bedrooms would face the harbor. A two-story porch was added on the water side and the house was lengthened by filling in a jog at the side and extending the roof. Two rooms were knocked together and the floor was dropped three steps to make a living room 33 feet long and 15½ feet wide. The rest of the first floor was left at the original level, thus putting the dining room on a platform at the end of the living room. French doors replaced the double-hung windows opening on the porch. The main entrance was changed from the side to the rear. A partition was knocked out between the old room at the side of the central hall and the hall itself, making this the new entrance hall. The stairs were unchanged save for a new newel post. By filling up the end of this hall and building a new chimney a fireplace alcove with books on either side was secured for the living room. After the alterations began on the central portion of the house it was decided to add a living porch at one side and a garage connected by a balancing colonnade on the other. This aided greatly in extending the line of the house.

The original contract was $16,200. The extras above this contract, including the moving of the house and installing a hot air heating system, came to $1,947.00. The cash allowance order for hardware, lighting fixtures and other decorating amounted to $1,860. Thus the total cost was only $20,007.

Van Anda

REMODELED HOUSE OF STEPHEN W. CARROLL
DERING HARBOR, LONG ISLAND
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS

HOUSE BEFORE REMODELING

In this case the architects secured the commission by pointing out to the client the saving in costs by remodeling an existing structure instead of building anew.

Van Anda

REMODELED HOUSE OF STEPHEN W. CARROLL
DERING HARBOR, LONG ISLAND
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS

STEREOTYPED HOUSES, BILLBOARDS, SHORT-SIGHTED PLANNING—A BLIGHTED AREA IN QUEENS, NEW YORK, GROWN UP WITHOUT ARCHITECTURAL ASSISTANCE.

REALTY DEVELOPMENTS AND THE ARCHITECT

By ARTHUR C. HOLDEN, ARCHITECT

Architects like to ignore the things that they don't consider "architecture." I've often wondered whether as a class they haven't been forced unwittingly to wear blinders. When they look at the buildings of a particular town they seem to have the power of shutting out most of the town and seeing only the city hall, the armory, perhaps a church or two, the country club, and the residences of the bank president and other local magnates.

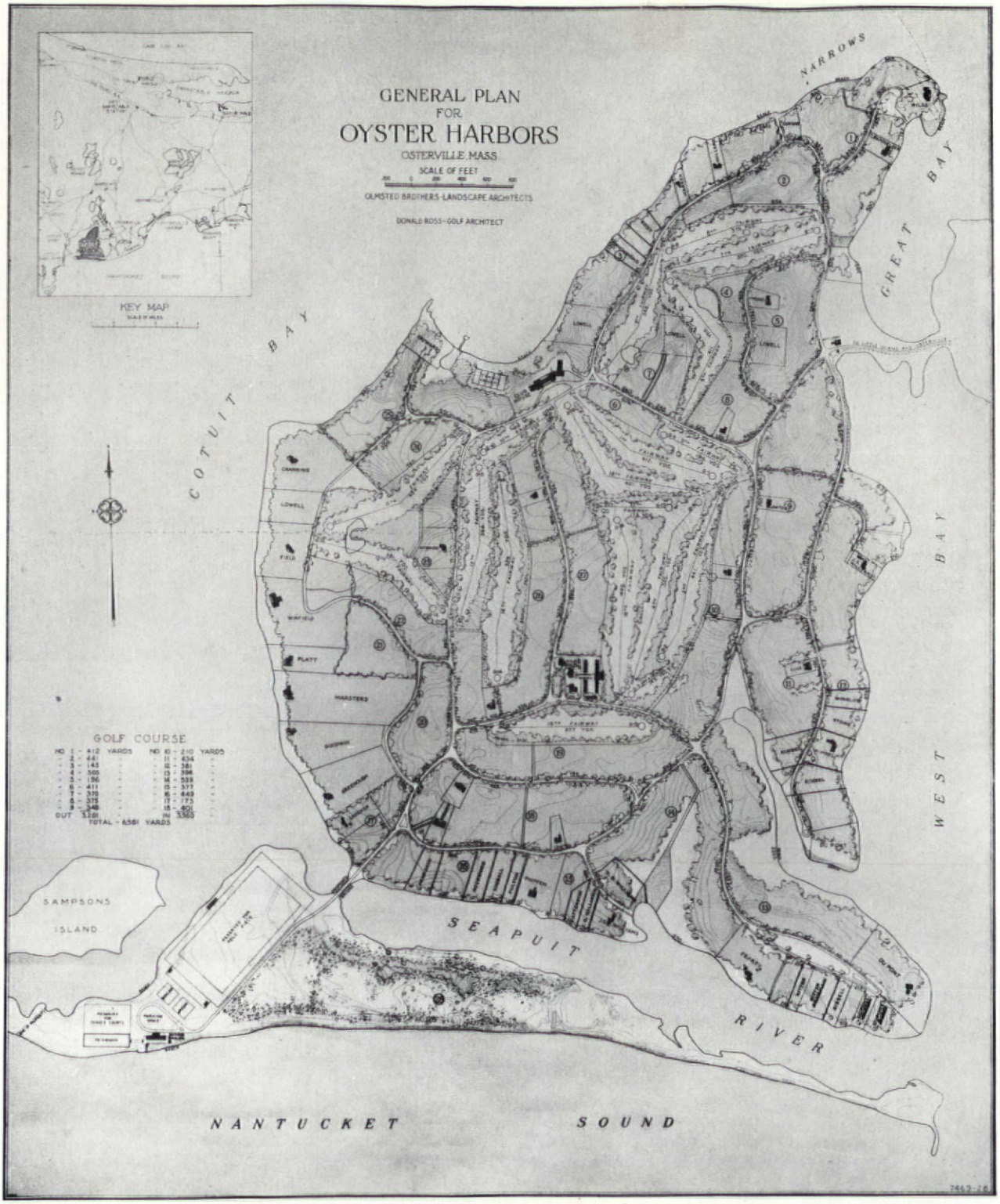
The jobs that an architect will describe as "architecturally important" represent the lucrative meal tickets, enjoyed by a few architects. Ask the same architect something about the rest of the fifty thousand inhabitants of the town, how they live and where, and he will tell you that isn't his business, that you had better ask the real estate man. (This is the same man who spends so much of his time wishing for jobs to come to him.)

Suppose you do ask the real estate man, what will you find out? Visit a lot with the average real estate man and listen to him speak of its charms and advantages. He wears blinders, too. He sees things from his point of view alone and shuts out from consideration those relationships to the outside world which reflect disadvantageously upon the plot he wants you to see. The average real estate man, like the average architect, thinks in terms of an individual job or sale.

The public has neither the training of the architect nor the experience of the realtor, yet it looks at things quite differently. The public thinks of an attractive street, an attractive town, the advantages of free, open rolling country, the beauties of a park frontage. Then the realtor and the architect come along and mark off the whole landscape with boundary lines. To the realtor these boundary lines are divisions of control, marking areas in which men are given absolute liberty to deface or mar the landscape, to load it with buildings or to strip it of trees, to proceed just as if the property within the boundaries could be treated as if it had no relation to anything beyond the boundaries.

The architect talks more about harmony perhaps than the realtor, but his idea of harmony is that the man next door should not do anything out of step with him. He wants the right to build just as his owner patron bids him. Afterwards his excuse for its shortcomings will be the refusal of the next door neighbor to cooperate.

To illustrate: the architect builds a charming private residence or a public



A RECENT ELABORATE EXAMPLE OF COMMUNITY PLANNING
OLMSTED BROTHERS, LANDSCAPE ARCHITECTS
DONALD ROSS, GOLF COURSE ARCHITECT

Fairchild Aerial Surveys, Inc.

AIR VIEW OF OYSTER HARBORS, MASSACHUSETTS, DEVELOPMENT
OLMSTED BROTHERS, LANDSCAPE ARCHITECTS
DONALD ROSS, GOLF COURSE ARCHITECT

library and then he looks at his own work with the fond admiration of a parent, putting on blinders, however, to obscure the sight of a gas station across the street or a grocery store next door. He will tell you it was a shame the man across the street didn't cooperate. This architect wasn't working for the town or the man across the street. He was hired by his patron to "doll up" a particular building.

But this does not touch fundamentals. The architect of the present day is regarded as a beauty specialist who may perhaps lift the face of the community, but who has no control over its organic life. The architect should be a man who understands the community, who is helping to direct its vital forces. *If the public once comes to believe that the architect has a mission which reaches down into the vitals of society, the public will seek the architect and he will no longer have to sit in the cold and wish for jobs to come to him.*

The architect must first fit himself for his true role, and secondly, he must create a new understanding of his mission in the mind of the public. In prosperous times, when the architect enjoys a sufficiency of doled jobs, he apparently doesn't have to worry. But in times like the present he cannot merely wish for jobs.

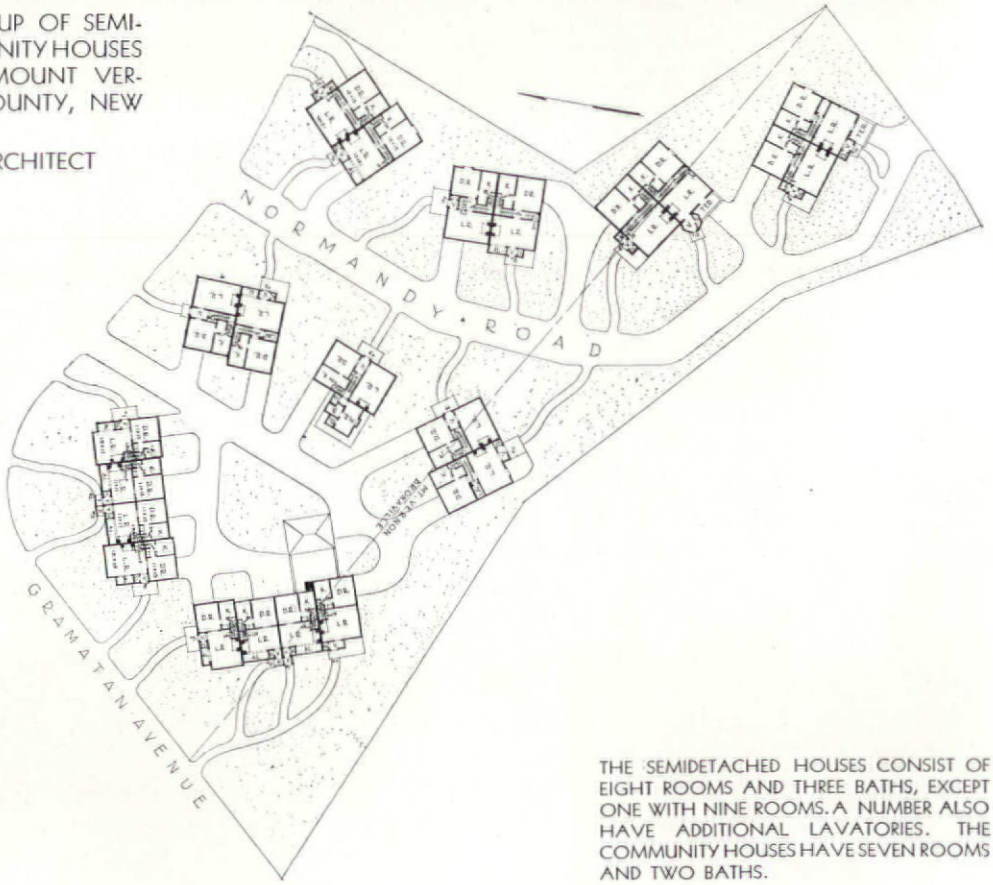
The picture is not all gloomy. The architect is working in directions which show that the profession is coming into a bigger conception of its part in the community. It is in the field of ideas that the architect must lead. He must furnish conceptions and adapt these so that they can be worked out within economic limitations. If an architect can show that the community suffers from lack of the architectural point of view he has gone far towards proving his usefulness.

Perhaps the best approach is to review briefly some of the projects with which architects have been connected.

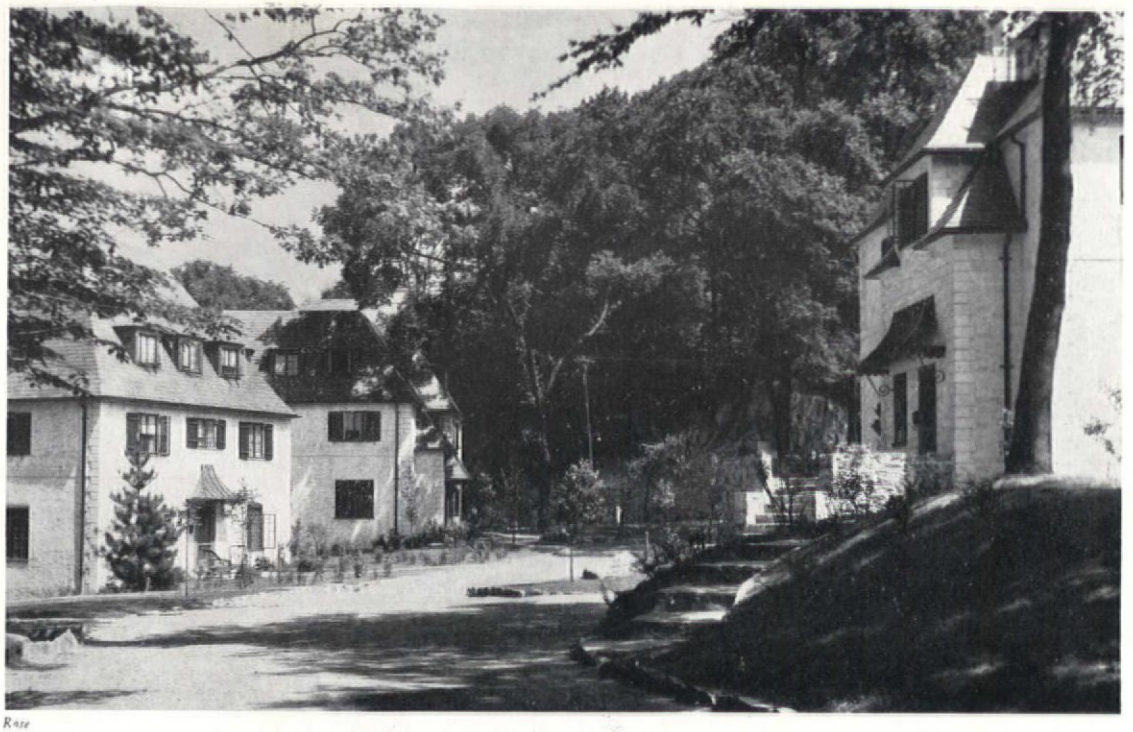
Le Man, Inc.

"NORMANDY"—A GROUP OF SEMI-DETACHED AND COMMUNITY HOUSES IN BRONXVILLE AND MOUNT VERNON, WESTCHESTER COUNTY, NEW YORK.

R. H. SCANNELL, ARCHITECT



THE SEMIDETACHED HOUSES CONSIST OF EIGHT ROOMS AND THREE BATHS, EXCEPT ONE WITH NINE ROOMS. A NUMBER ALSO HAVE ADDITIONAL LAVATORIES. THE COMMUNITY HOUSES HAVE SEVEN ROOMS AND TWO BATHS.



Rose

Rose

EACH HOUSE HAS A PRIVATE GARAGE AND LAUNDRY IN THE BASEMENT. BOTH HEAT AND ELECTRICAL REFRIGERATION ARE FURNISHED FROM CENTRAL PLANTS.

"NORMANDY," BRONXVILLE, NEW YORK
R. H. SCANNELL, ARCHITECT

Rose

"NORMANDY," BRONXVILLE, NEW YORK
R. H. SCANNELL, ARCHITECT

WASHINGTON, D. C.

The first American example of large scale planning with the architectural point of view is the city of Washington. The story is well known. Two architects of commanding personality, McKim and Vernon, acting with Senator McMillan, succeeded in pointing out that Washington was suffering because the original plan of the city laid out by the architect L'Enfant had been neglected. The public got the idea and a commission was appointed to make the plan effective.

The method of thinking ahead is being extended into the environs of Washington beyond the District of Columbia. At the present time there is a project under way which will give a national parkway and drive along both banks of the Potomac from Mt. Vernon to the falls; it will be the backbone of the regional plan of that part of the Potomac valley adjacent to Washington.

The recent reclamation of the so-called triangle between Pennsylvania Avenue and the Mall has been planned to remedy the damage done by some of the temporary buildings during the War. This is going to bring back into economic use a blighted and neglected section of the city. The great program of construction work has been parceled out to leading architects. Architects have in this case demonstrated their ability to work together and even to some extent their willingness to sacrifice personal advantage to the public interest.

Washington, however, is not made up entirely of public buildings. The commercial buildings in the business sections located close to public monuments have an esthetic, practical and economic relation to official Washington. While it would have been deplorable to have the government exercise rock-ribbed restrictions for these commercial buildings, it is strange that no method of cooperation has apparently been found between the architects and the government to work out some method of bringing the commercial buildings of the capitol into harmony with official Washington. Congress has been lax in the matter of zoning and height restrictions, and the architects on their side have failed to make known to the public what they could do.

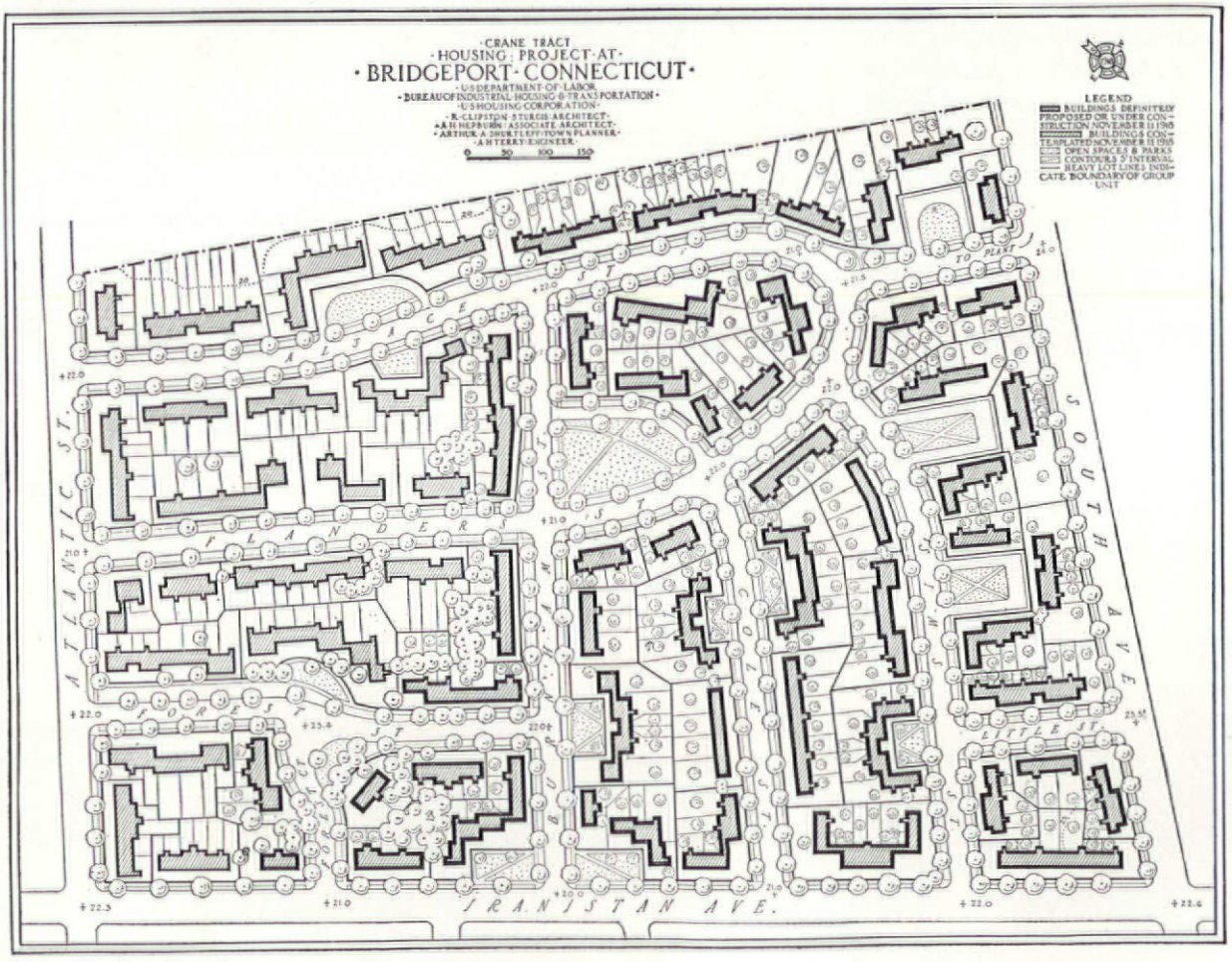
The same is to be said about the homes in which the people of Washington live. Along the more important streets, in the outlying sections, many very beautiful individual houses, especially some of the newer embassies where individual architects have worked with rare distinction, have been built. But the homes of the tens of thousands of governmental clerks and the homes of people of modest incomes, which would have offered an opportunity for a farsighted, comprehensive plan, have been sadly neglected.

WESTCHESTER COUNTY PARK COMMISSION

Of no less importance has been the work done in Westchester County, New York, through the Westchester County Park Commission. The inspiration back of the work of this commission was the successful completion of the Bronx River Parkway which had already been organized and successfully carried out largely through the personal leadership of Jay Downer, its chief engineer and architect. The course of the Bronx River, which is parallel most of its distance with the Harlem Division of the New York Central Railroad, had become a blighted section and offered real liability to some of the communities through which it passed. Through special legislation the Bronx River Parkway Commission was set up with funds contributed both by the benefited area and by New York City. This commission acquired sufficient land by condemnation and purchase on both sides of the river to restore a beautiful park strip through the middle of which a wide cement highway was constructed from the northernmost terminus of the Bronx Park and New York City to Kensico Reservoir above White Plains.

Gottscho

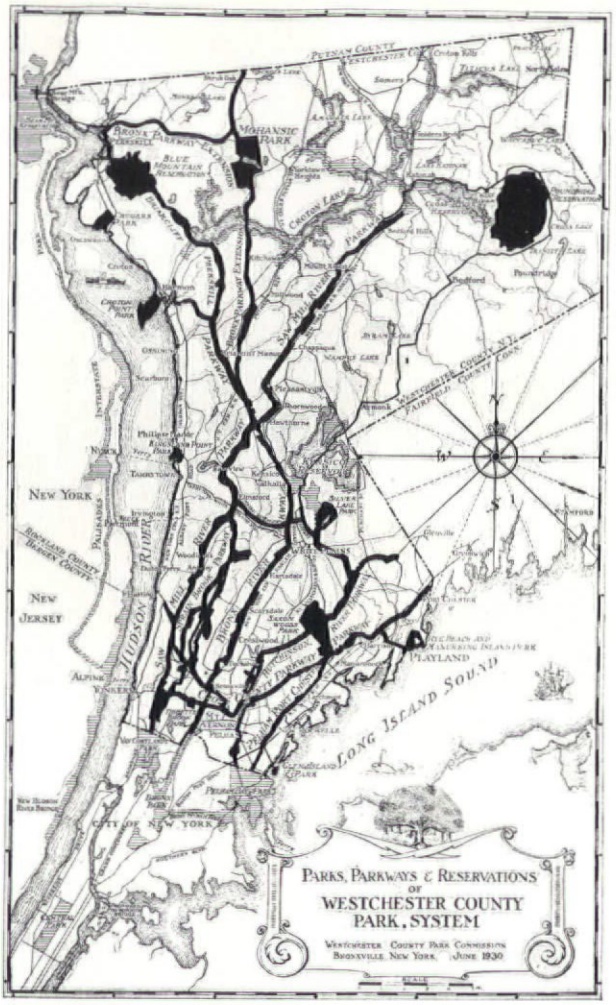
DEVELOPMENT AT BRIDGEPORT, CONNECTICUT, SHOWING GROUPING OF TYPE HOUSES



Courtesy of United States Housing Corporation

So successful was the project, so enthusiastic the communities through which it passed because of the benefits brought to them, that Westchester County itself set up its own parkway commission which was empowered to lay out a far more extensive park system to bring similar benefits to other sections. Mr. Downer was made the chief engineer of the new commission; the executive authority both for the plan and for the execution of the work was placed in his hands. The effect has been far-reaching. Westchester County has been given a system of express highways designed for automobiles. The parking on either side of the highway has served to protect adjoining property from too direct proximity to heavy lines of traffic, and where the parkway widens out, full park facilities, including golf, bridle paths and other recreational facilities, have been made directly available to home owners.

Successful and appreciated as is the project of the Westchester Parkway system, its full benefits are only beginning to be realized. The opportunity for architects is almost unlimited. The very existence of the parkways will have a unifying effect upon the architecture of the buildings which grow up along its borders. Some sites are suitable for large estates; other sites may see the development of a new type of multiple dwelling.



Courtesy of Westchester County Park Commission

BY MEANS OF LAND CONDEMNATION WESTCHESTER COUNTY HAS CHANGED A BLIGHTED AREA INTO A BEAUTIFUL PARKWAY DIRECTLY AVAILABLE TO HOME OWNERS.

BRIDGEPORT HOUSING ASSOCIATION

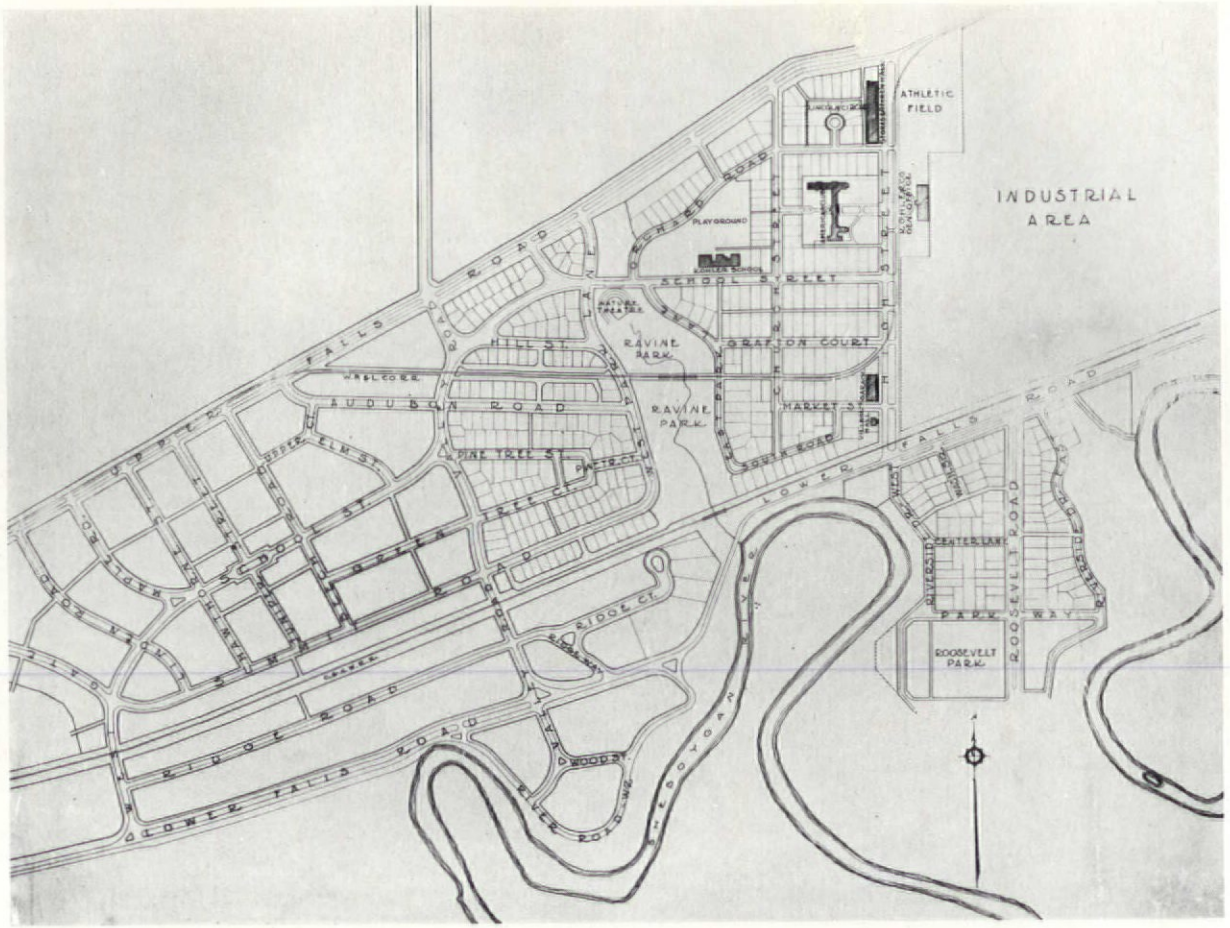
During the war a very special problem was presented in the development of housing. The nation was faced with the necessity of creating small towns and subdivisions to take care of industrial workers. Even before the war, Bridgeport, Connecticut, with its copper and brass industry had realized this special problem and the Bridgeport Housing Association had been formed with William H. Ham as its engineer and executive. He called in R. Clipston Sturgis, Andrew H. Hepburn and others as architects, and Arthur A. Shurcliff as town planner. The government took over all of the corporation's housing as well as the construction work during the war. The grouping of small homes in three-, four- and six-room units shows skillful architectural handling. Here has been demonstrated how great is the advantage of alternating one-and-a-half story and two-and-a-half story units. Basically there are few types, but the arrangement of these types is such that there is no feeling of stereotyped duplication.

A COMMUNITY DEVELOPMENT BUILT BY AN INDUSTRY

KOHLER VILLAGE, WISCONSIN
RICHARD PHILIPP, ARCHITECT
OLMSTED BROTHERS, LANDSCAPE ARCHITECTS

BUILDINGS FINANCED BY BUILDING AND LOAN ASSOCIATIONS AND SOLD WITHOUT PROFIT

KOHLER VILLAGE, WISCONSIN
RICHARD PHILIPP, ARCHITECT
OLMSTED BROTHERS, LANDSCAPE ARCHITECTS



PLOT PLAN OF KOHLER VILLAGE, WISCONSIN
RICHARD PHILIPP, ARCHITECT
OLMSTED BROTHERS, LANDSCAPE ARCHITECTS

KOHLER VILLAGE, WISCONSIN

Many industrial organizations have recognized the housing problem. There are many examples that are interesting as architecture and as social experiments. The Kohler Company retained the landscape architects, Olmsted Brothers of Boston, to plan a village adjoining a new plant at Kohler, Wisconsin. Richard Philipp of Milwaukee was the architect. The advantage of forethought is clearly demonstrated: where the standard of home life is improved, the standard of workmanship and industrial efficiency is also quickened.

Kohler Village is an example of the advantages that are gained when exploitation and waste are made impossible because of exacting requirements. One has only to compare the town of Kohler with some of the industrial towns that have grown without any forethought and without any force capable of preventing exploitation to realize the value of an intelligent directing authority.

MARIEMONT, OHIO

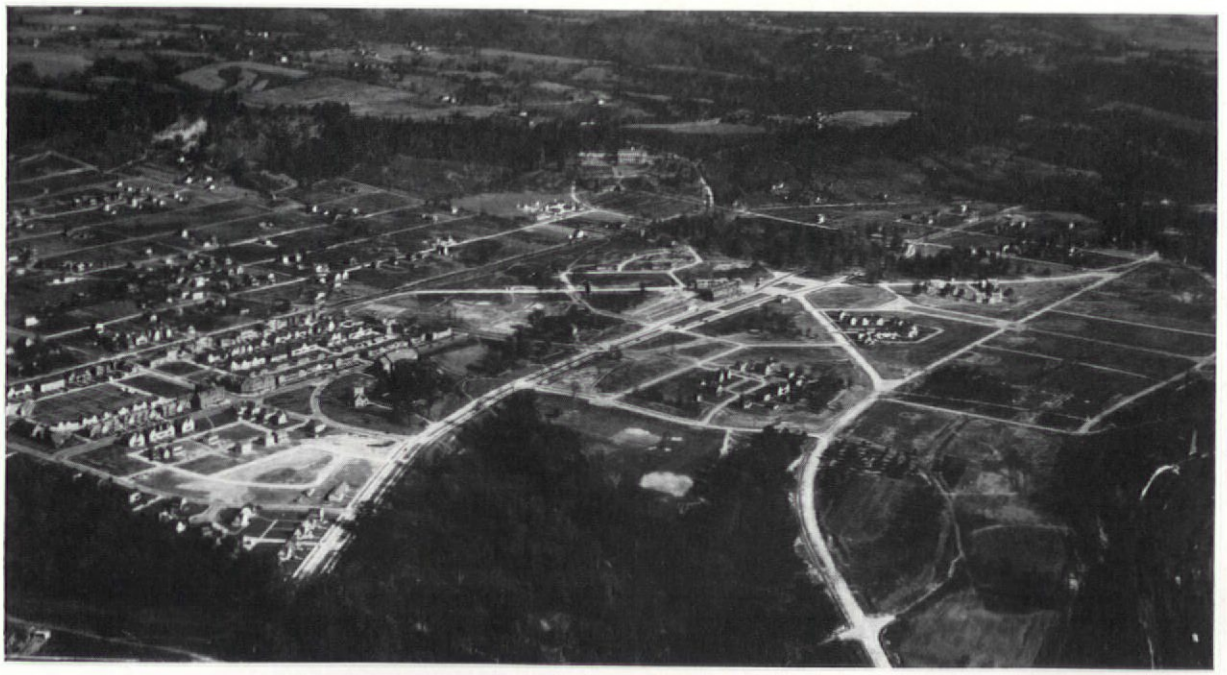
Mariemont, Ohio, near Cincinnati, is a town planned as an ideal community—the vision of Mrs. Mary M. Emery. She revolted against the many dreary suburban communities she had encountered. She acquired some property and retained John Nolen of Cambridge, Massachusetts, and his associate Philip W. Foster, to lay out the town. The requirement was laid down

in advance that there was to be no exploitation and that all facilities were to be provided, including fully-paved streets, curbs and sidewalks, sewer lines and even steam heat piped from a central generating plant. The town was districted for different income groups and various architects were called in and given the work of doing whole blocks of houses. Different styles of architecture were suggested. Some interesting results were obtained although the whole project has scarcely proved its economic value. Too much was spent on streets and facilities at the outset and the development has not been rapid enough to overtake the enormous overhead and reduce it within the range of those for whose benefit the town was designed. For this reason many of the houses are disposed of below cost. The town is an example of great importance for the many lessons it teaches.

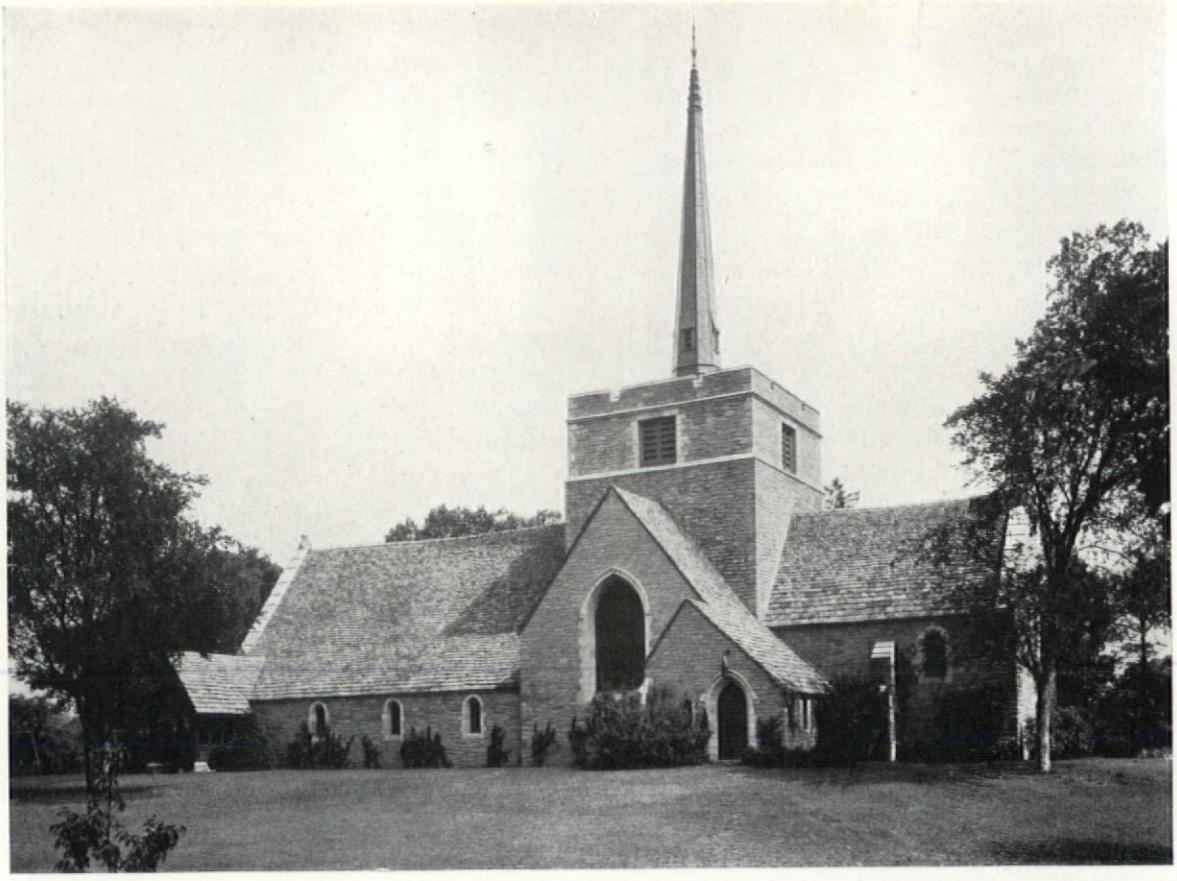
RADBURN, NEW JERSEY

The success of the City Housing Corporation in the development of Sunnyside in Queens Borough, New York, and the difficulties encountered with blocks laid out according to a stereotyped city map, led to the acquiring of virgin farm sites in New Jersey and their conversion into the ideal town of Radburn. The plan for this was made by Clarence Stein and Henry Wright, architects.

The unique feature of the Radburn plan is the super-block penetrated by cul-de-sac streets, around which the individual houses are grouped. These houses are placed very close together and the open space is concentrated in the center of the block. The development has been gradual and streets, houses and landscape worked out together. The project is on the economic basis of houses sold at a reasonable figure. The great advantage of Radburn is that each individual owner of a small house is guaranteed permanent adjacent park and recreation facilities which he and his children can reach directly without crossing an automobile route. In the plan of Radburn provision has been made for the ultimate development of individual industrial sites. The architects Frederick L. Ackerman and Andrew J. Thomas have also cooperated in developing Radburn.



AIR VIEW OF MARIEMONT, OHIO, A LARGE AREA WITH COMPLETED STREETS WHICH HAS BEEN ONLY PARTLY BUILT UP WITH HOUSES
JOHN NOLEN AND PHILIP W. FOSTER, TOWN PLANNERS



MARIEMONT MEMORIAL CHURCH
LOUIS E. JALLADE, ARCHITECT

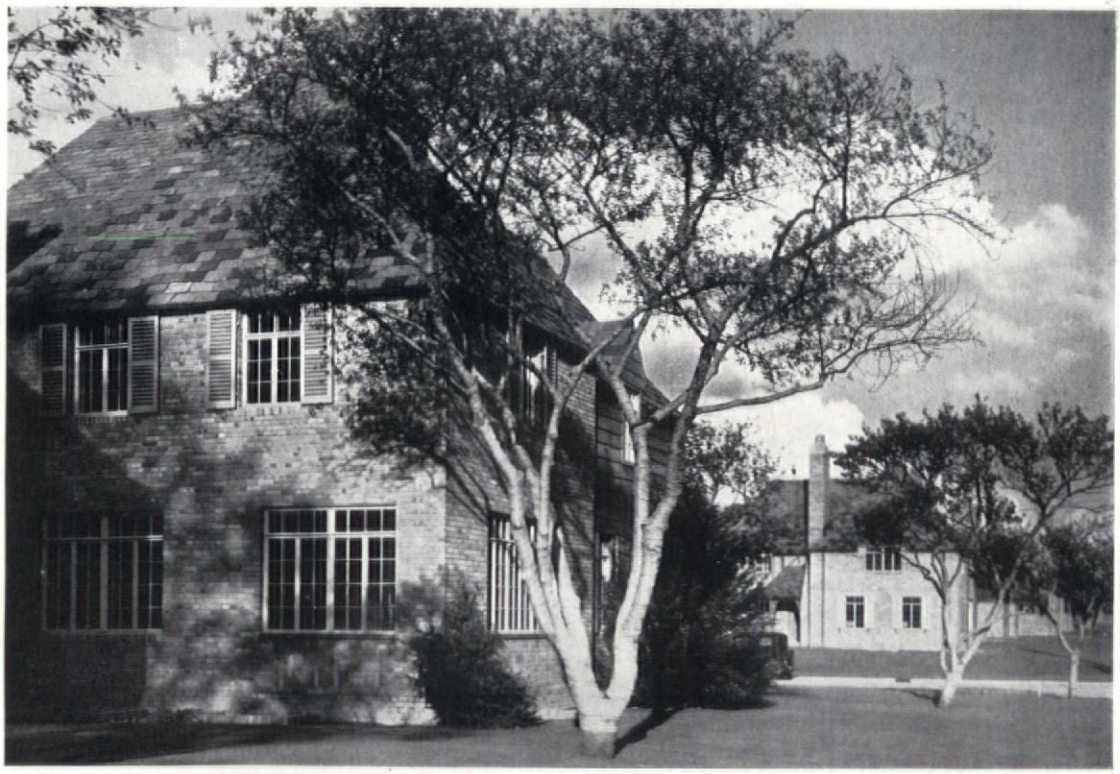
LINDEN PLACE, MARIEMONT, OHIO
ELZNER AND ANDERSON, ARCHITECTS

GROUP HOUSING, MARIEMONT, OHIO
CARL A. ZIEGLER, ARCHITECT

HOUSE OF A. C. GUY, MARIEMONT
RICHARD C. TAYLOR, ARCHITECT

MODEL OF FOREST HILL DEVELOPMENT, CLEVELAND, OHIO
ANDREW J. THOMAS, ARCHITECT

CHARACTERISTIC INTERIOR OF A FOREST HILL HOUSE.

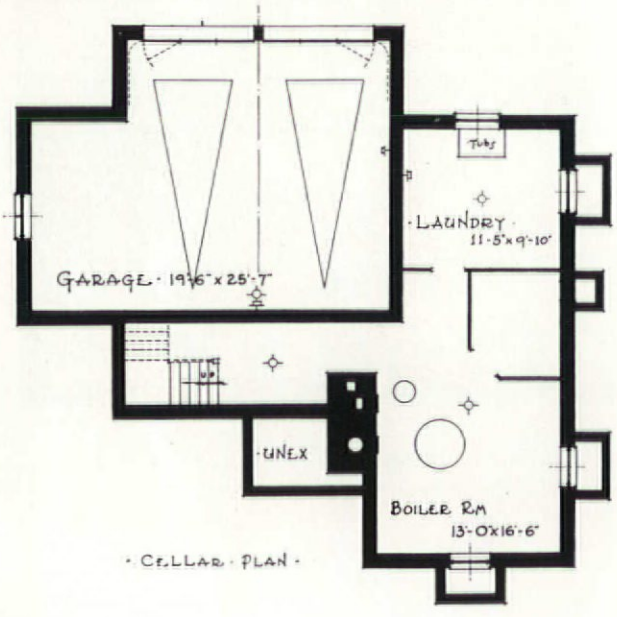


TYPICAL HOUSES, FOREST HILL SUBDIVISION, CLEVELAND
ANDREW J. THOMAS, ARCHITECT

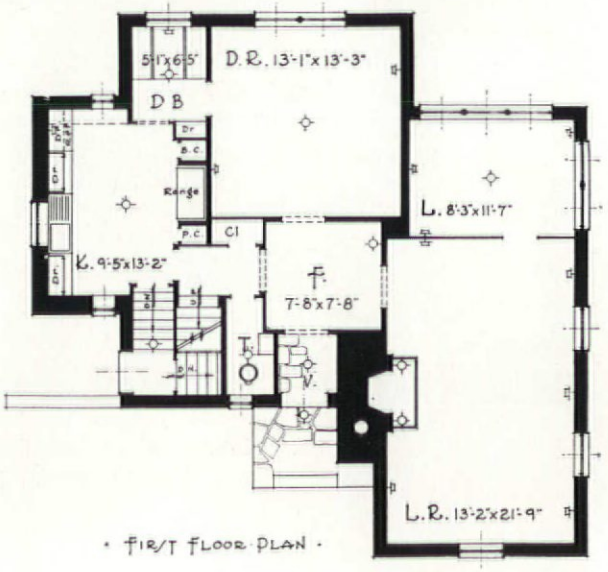
DETAIL OF TYPICAL HOUSE, FOREST HILL SUBDIVISION, CLEVELAND
ANDREW J. THOMAS, ARCHITECT

TYPICAL HOUSE, FOREST HILL SUBDIVISION, CLEVELAND
ANDREW J. THOMAS, ARCHITECT

HOUSE IN FOREST HILL SUBDIVISION, CLEVELAND
ANDREW J. THOMAS, ARCHITECT

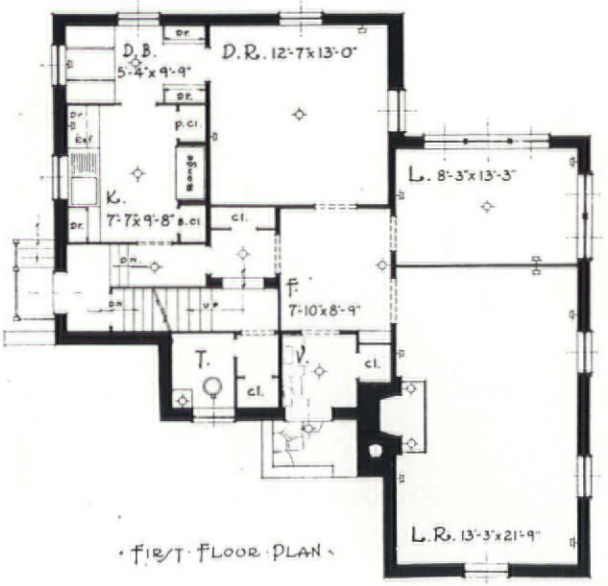


· CELLAR · PLAN ·

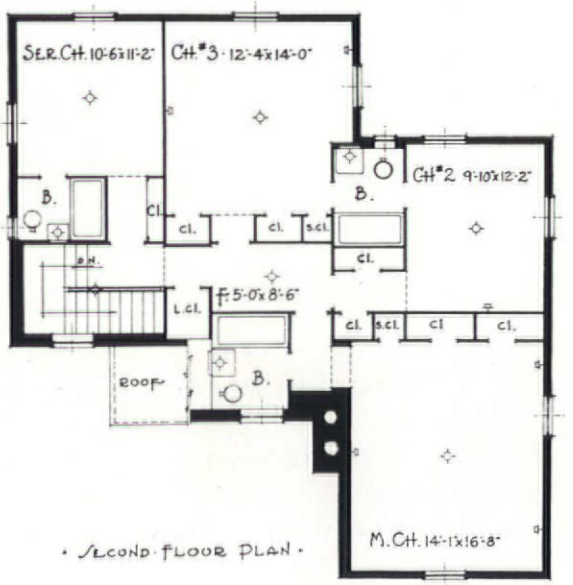


· FIRST FLOOR PLAN ·

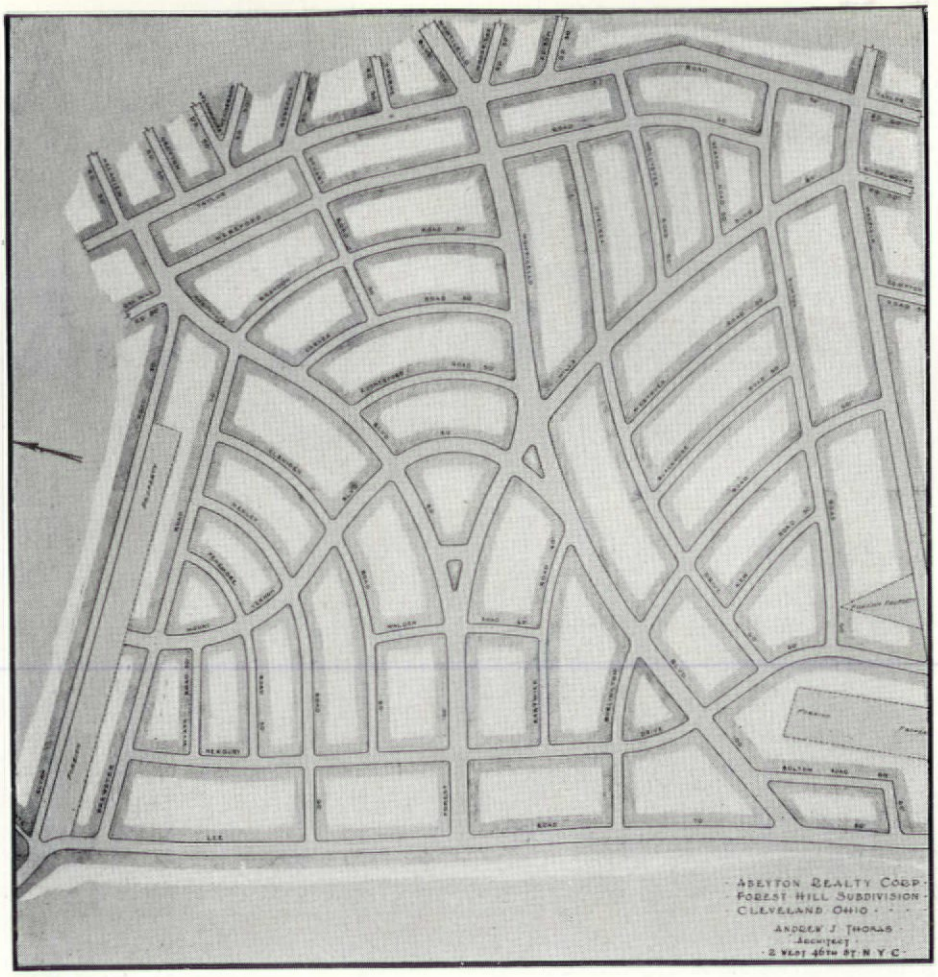
HOUSE IN FOREST HILL SUBDIVISION, CLEVELAND
ANDREW J. THOMAS, ARCHITECT



· FIRST FLOOR PLAN ·



· SECOND FLOOR PLAN ·



FOREST HILL SUBDIVISION
CLEVELAND, OHIO
ANDREW J. THOMAS
ARCHITECT

400 ACRES ORIENTED FOR PRIVACY AND RESTRICTED AS TO BUILDING TYPES AND PURCHASERS.

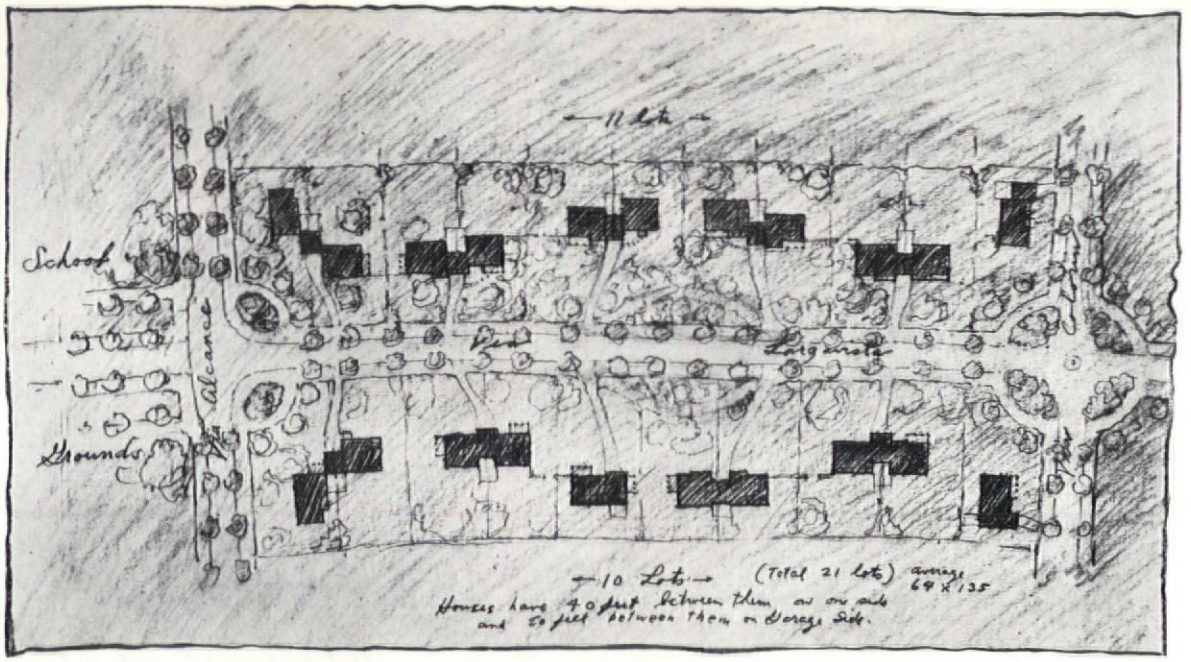
Courtesy of Building Investment

FOREST HILL SUBDIVISION, CLEVELAND, OHIO

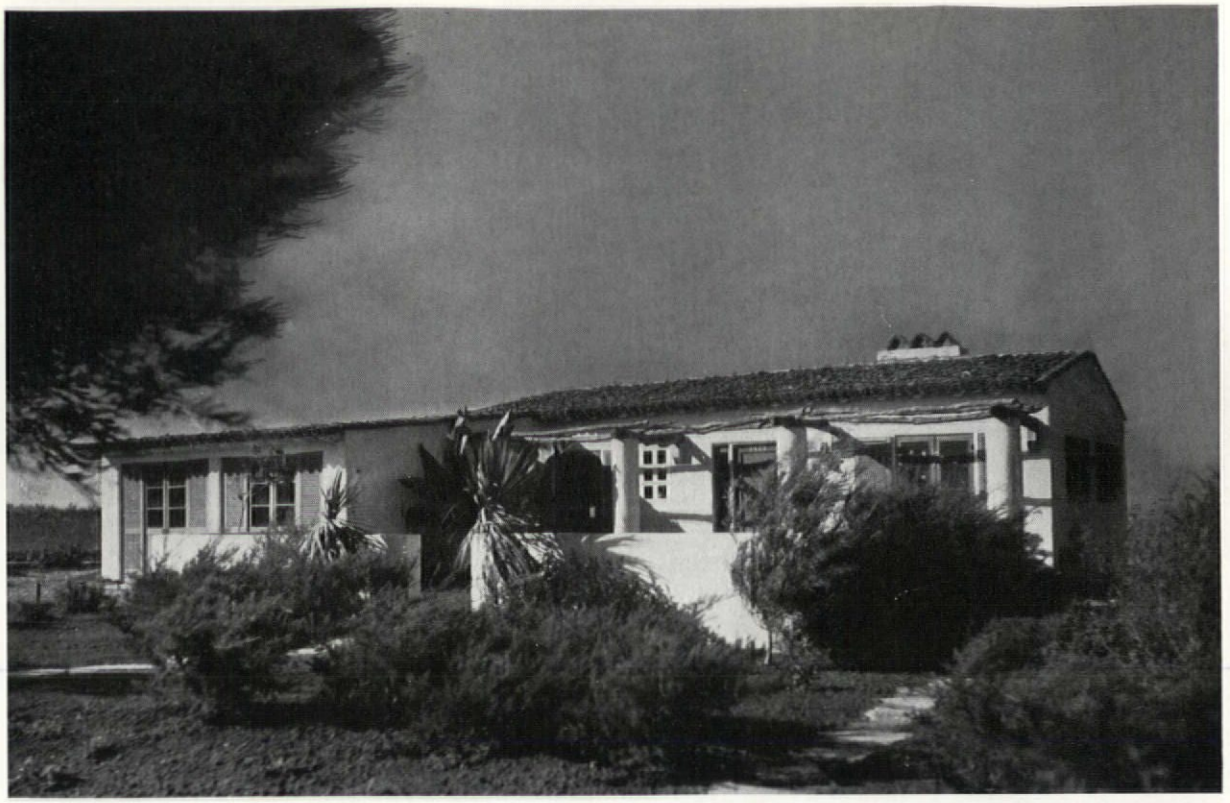
On the old Rockefeller farm in Cleveland, Ohio, Andrew J. Thomas has developed through his own initiative an ideally planned community. Here is the case of an architect who has sold an idea to his client. The old Rockefeller farm had long been held in the family after the city had grown around it. When the time came for the farm to go, rather than as a mere sale to subdividers, the Rockefeller family determind to plan for the future and control the character of its development. Mr. Thomas with his ability as a designer has put architectural charm into the community.

CALIFORNIA DEVELOPMENTS

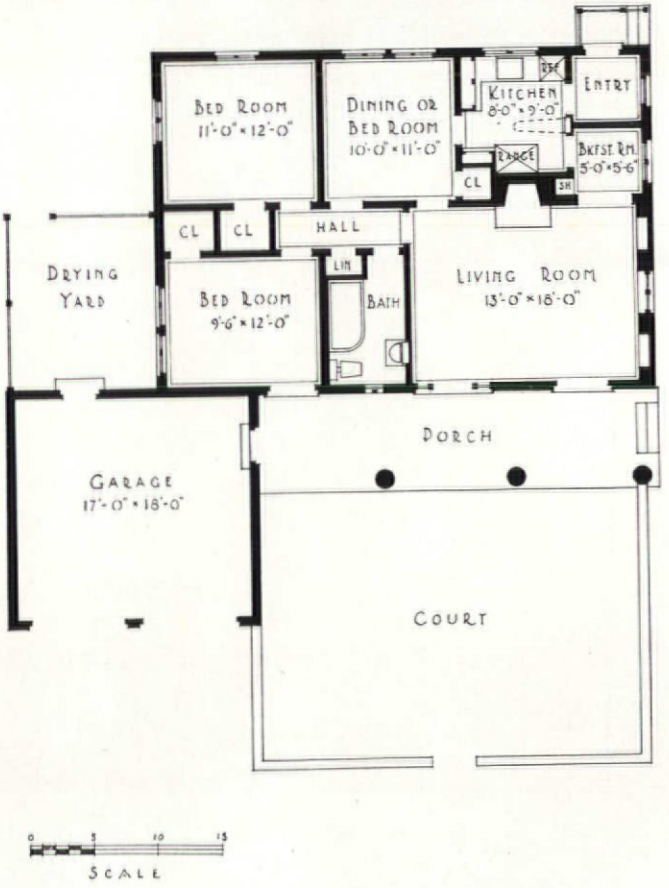
In California where the great difference in climate makes a different type of architecture more desirable, suburban development is perhaps at its highest level. The strong sunlight, the long dry season, the desirability of life out of doors, have been the forces which have made the architecture of Southern California grow naturally from Mexican precedent—stucco walls, gently sloping roofs of Spanish tile, open patios, covered loggias. Seldom are private houses more than two stories high. All these features tend to make the architecture fit the landscape.

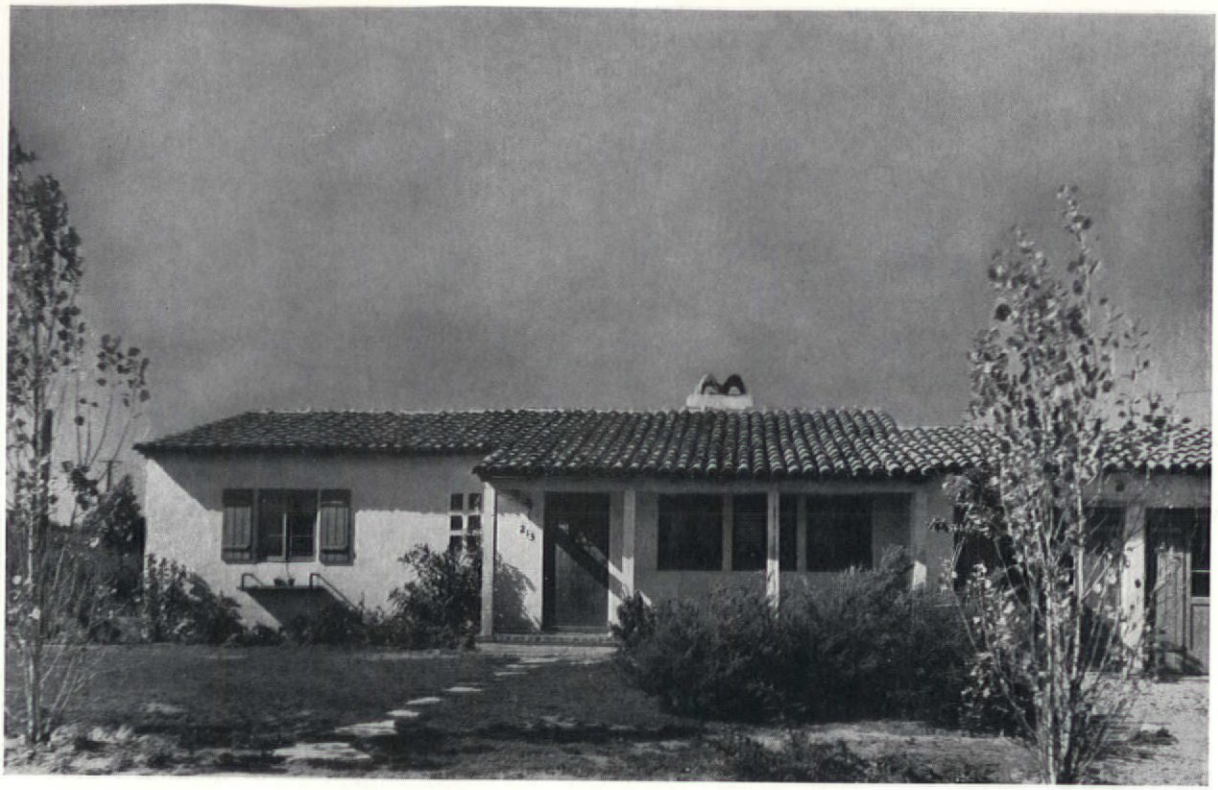


PLOT PLANS FOR PALOS VERDES ESTATES, CALIFORNIA
H. ROY KELLEY, ARCHITECT

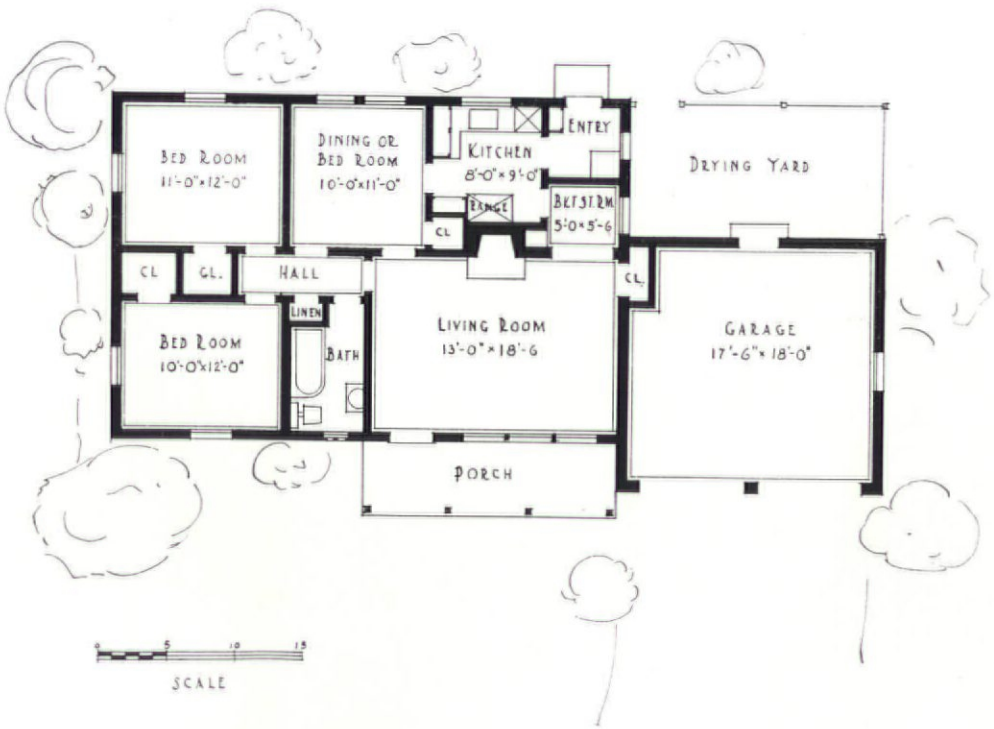


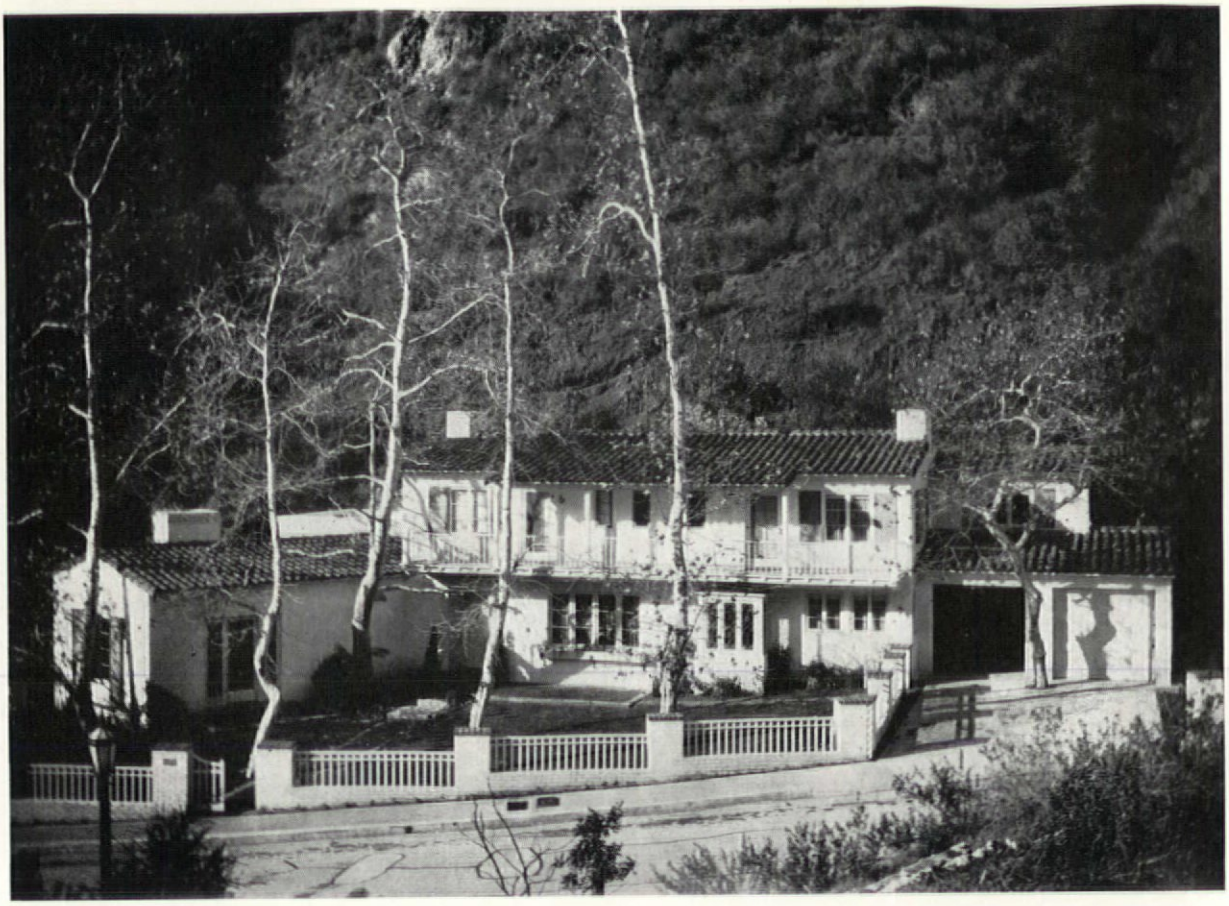
HOUSE AT PALOS VERDES
ESTATES, CALIFORNIA
H. ROY KELLEY, ARCHITECT



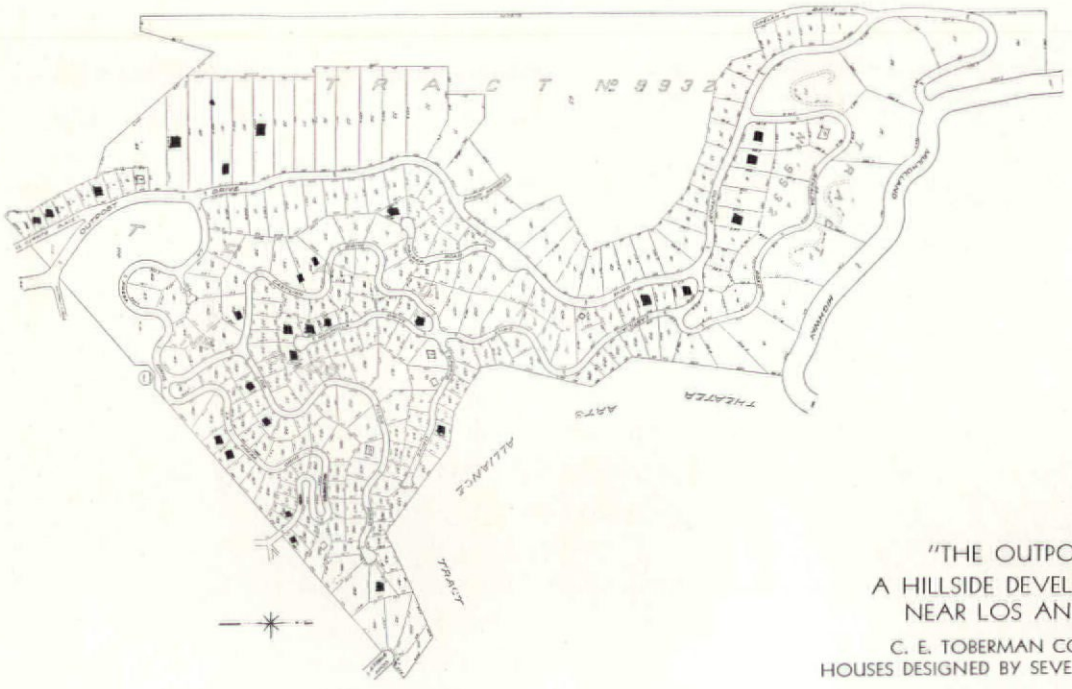


HOUSE AT PALOS VERDES ESTATES, CALIFORNIA
H. ROY KELLEY, ARCHITECT





HOUSE OF HOMER M. TOBERMAN
"THE OUTPOST," LOS ANGELES
ROLLIN F. PIERSON, DESIGNER



"THE OUTPOST"
A HILLSIDE DEVELOPMENT
NEAR LOS ANGELES
C. E. TOBERMAN COMPANY
HOUSES DESIGNED BY SEVERAL ARCHITECTS

Powell Studios

HOUSE OF E. B. MILBURN AND HOUSE OF J. R. KENNEDY

HOUSE OF WALTER P. LOHMAN, "THE OUTPOST," LOS ANGELES
ROLLIN F. PIERSON, DESIGNER

LOWER EAST SIDE, NEW YORK CITY

An example of a different type where architects have had an opportunity to cooperate in a way to mold the development of a large district is the work done for the neglected area of the Lower East Side in New York City. My own office had set itself the task of studying the problems of this neighborhood and has been greatly interested in the district for about ten years. About two years ago the East Side Chamber of Commerce began to come to the front as representative of the sentiment and best leadership of the district. This was largely due to the enlightened point of view of its executive secretary, Joseph M. Platzker.

The Lower East Side has been the classic example of bad housing conditions, due to congestion and neglect, and the consequent depreciation of badly designed tenement houses. The narrow streets of the district have been an obstacle to traffic and the construction of the great East River bridges with their long approaches have made the situation worse rather than better.

My associate, John T. Boyd, Jr., and I went to the East Side Chamber and explained that the one sure way out of the difficulties was the making of a complete plan of the district. This would first comprise the necessary re-planning, street widenings and improvements of street facilities; then, the necessary improvement of transportation, park and recreational facilities, zoning studies for a guarantee of permanent light and air and the proper distribution of buildings as to use. This plan is now actively under way although only preliminary studies have so far been published. One of the greatest problems is the re-assembly of property which has been subdivided on the basis of the 25′ lot which is no longer a workable economic unit for a modern city. At the present time it appears that large scale operations with block development and even developments comprising groups of blocks will be used.

So far it has been very difficult to work

ACTUAL DEMOLITION OF LOWER EAST SIDE, NEW YORK CITY. THIS AREA WILL BE REBUILT.

against the old idea that, once a slum, a district must remain the home for the very poor. Part of the plan must be the re-housing, in the outlying boroughs of Queens, Brooklyn and the Bronx, of those who now occupy the dilapidated rookeries of the old East Side. Most of the East Side developed under the system of group ownership with the present owners, jointly with those who advanced the new capital, reaping the reward. The rehabilitated East Side will become the quarter where a new type of apartment, planned for permanent light and air and recreational facilities and the utmost desirable living, will be located.

Architects have not yet "sold their services" although they have made a beginning. They should, both as individuals and as a group, do everything within their power to keep constantly in the mind of the public the services which they are capable of rendering. In preaching this doctrine, they should point out the great importance of community service and community planning. Such emphasis will in no way belittle the service which the architect has already been rendering. Often, however, the individual client feels that the architect is a luxury which he cannot always afford. The architect has to combat this objection by showing that his services are useful and valuable not only to the rich but *to everyone in the community*.

PROCEDURE WITH CLIENTS

AS FOLLOWED BY THE OFFICE OF JOHN RUSSELL POPE, ARCHITECT

By PARKER MORSE HOOPER

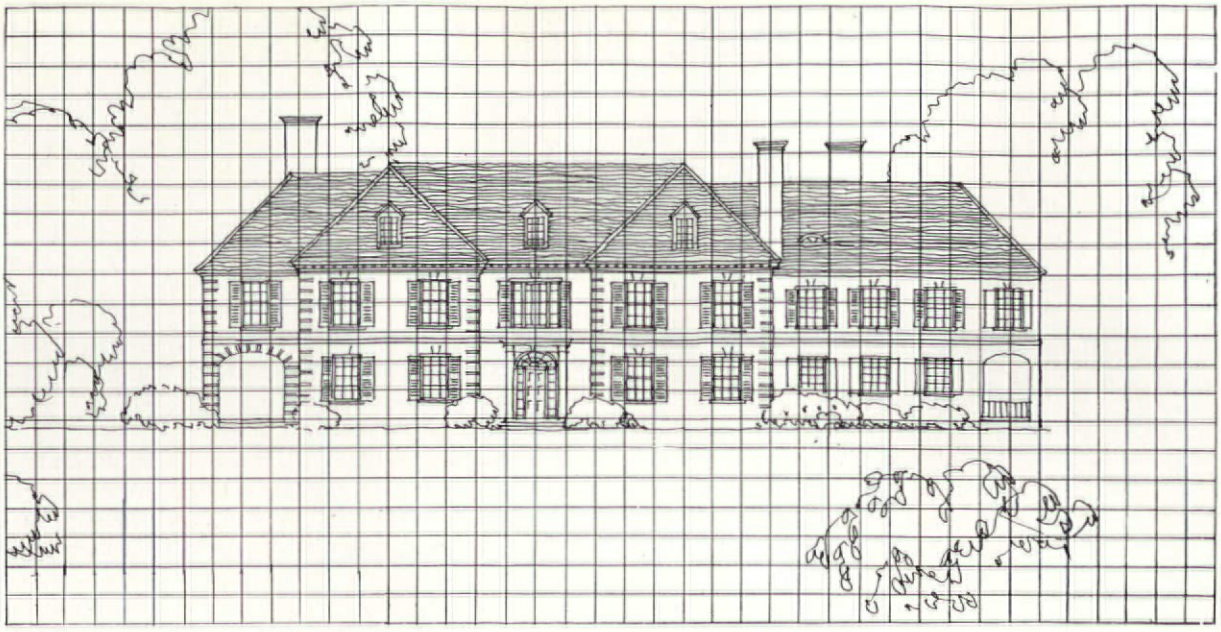
In the last two issues of THE ARCHITECTURAL RECORD the Manual of Office Procedure of the office of John Russell Pope, architect, was published completely. From this efficient and carefully elaborated outline any architect can compile a manual of office practice for himself which should add greatly to expeditious handling of his work. In Part 1 of Office Procedure, published in the February issue, three short paragraphs are devoted to the subject of Preliminary Work, Conferences and Estimates. From these brief paragraphs Mr. Pope and his two partners, Mr. Eggers and Mr. Higgins, have developed a complete and satisfactory method of handling proposed work before contracts have actually been signed and permission given to proceed with the construction. The outline of procedure is based on proposed residence work, but with added details and changes may easily be used to cover any other type of architectural work, such as clubs, hospitals and museums, for which this firm is famous.

At the first interview with the prospective client, at which one or more members of the firm are present, an effort is made to determine in what particular style of architecture, if any, the client wishes his house to be designed. Next the size of the house, requirements and number of rooms are ascertained. If the client has already prepared an outline covering these necessary data it is much easier for the architects to obtain a definite idea of what he has in mind. Next to requirements comes cost. Most clients have in mind a definite sum which they are willing to spend. Oftentimes the size and character of the house they have in mind far exceeds the amount of money they wish to spend. This adjustment of the job to the pocket book is one of the architect's most difficult problems. If the client has no particular preference as to style he often asks for preliminary sketches showing a similar plan with elevations in several styles.

It has been the experience of Mr. Pope's office that preliminary plans and elevations drawn up in diagrammatic form on coordinate paper, where each square represents a definite number of inches, is the best way in which not only to arrive at an approximate cost of a job but also to assist the client in deciding on the style and arrangement of his house. From these diagrammatic plans and elevations it is possible to obtain a total cubage of the house, definite ceiling heights, and a suitable arrangement of the plan requirements, somewhere within the client's price. Such a preliminary conference followed by the preparation of diagrammatic plans, elevations and outline specifications for a country house of medium size can easily be done for a prospective client at a cost of about $250.

In the preliminary outline the various rooms required may be cubed even before they are definitely located on the plan so that a very rough idea of the possible cost may be determined before the diagrammatic plans and elevations are sketched out. Nothing gives greater satisfaction to a client who is proposing to build a house than the thought that he may obtain from an architect some idea of the plan, style and cost of the house he has in mind without involving him in a large fee for preliminary architectural services. Too many people hesitate to employ architects, first, because they have the erroneous impression that the architect's fees are out of proportion with the services they render, and, second, because they have little or no appreciation of how necessary, valuable and important in the carrying out of any kind of construction work are the services of an architect. Too many potential clients are frightened away by the fear that the architect will force upon them ideas beyond their means as well as their needs. It is particularly important in the first conference between a prospective client and an architect that the architect should allow the client to lead the discussion. Tact and diplomacy are most important factors in the successful handling of clients. Fortunate is the architect who can lead his client in such a way that the client thinks he is leading the architect. Often it is necessary for an architect to educate his client into appreciating and wanting the right thing. If an architect can make a client think that the architect's ideas have originated with him and not with the architect, success is assured providing the architect is worthy of his title.

In presenting the following schedules it might be explained the first schedule is a brief outline obtained from the first interview with the client of the principal items required by the architect in roughing out the preliminary sketches and outline specifications. The second outline is a sample of the information furnished a client with the diagrammatic plans and elevations sketched out on coordinate paper as shown in the accompanying illustrations. The outline entitled Proposed Residence



PROPOSED HOUSE FOR MR. WILLIAM JONES, COLUMBUS, OHIO
OFFICE OF JOHN RUSSELL POPE, ARCHITECT

SKETCH ILLUSTRATES USE OF COORDINATE PAPER TO DETERMINE READILY THE CUBAGE

for Mr. William Jones, Columbus, Ohio, happens actually to describe the sketch plans and illustrations shown herewith. The list of rooms with their cubage and total approximate costs are based on sketches for another house not illustrated in this article.

PROPOSED HOUSE FOR MR. WILLIAM JONES, COLUMBUS, OHIO

STYLE: Late Georgian.

MATERIALS: Brick walls, slate roof, wood entrance porch, shutters and window sash and frames.

CONSTRUCTION: Concrete foundations and basement floors. Exterior walls to be brick veneer on terra cotta tile. Basement partitions to be tile or concrete block. All partitions above ground to be wood stud construction, excepting garage walls which will be terra cotta tile. Garage ceiling to be cement plaster on metal lath. Floor over boiler room to be concrete slab construction. All other floors throughout house to be wood joist construction.

HEATING AND PLUMBING: Heating system to be vacuum steam. Radiators in master's portion of house to be type similar to Rome Brass and all to be enclosed. Standard plumbing fixtures and accessories with brass piping for hot water lines.

INTERIOR FINISH: First floor in master's portion of house to be random width and length oak, and to have stairway, trims, cornices and wainscoting of painted wood. Fireplace mantels to be wood with marble facings. Second floor in master's portion of house to have narrow width hardwood floors and plaster cornices.

DIMENSIONS OF BUILDING UNITS: Sizes shown on plans are approximate.

Ceiling height, master's portion, first floor—10′0″
Ceiling height, master's portion, second floor— 9′0″
Ceiling height, service portion, first floor —8′10″
Ceiling height, service portion, second floor— 8′0″

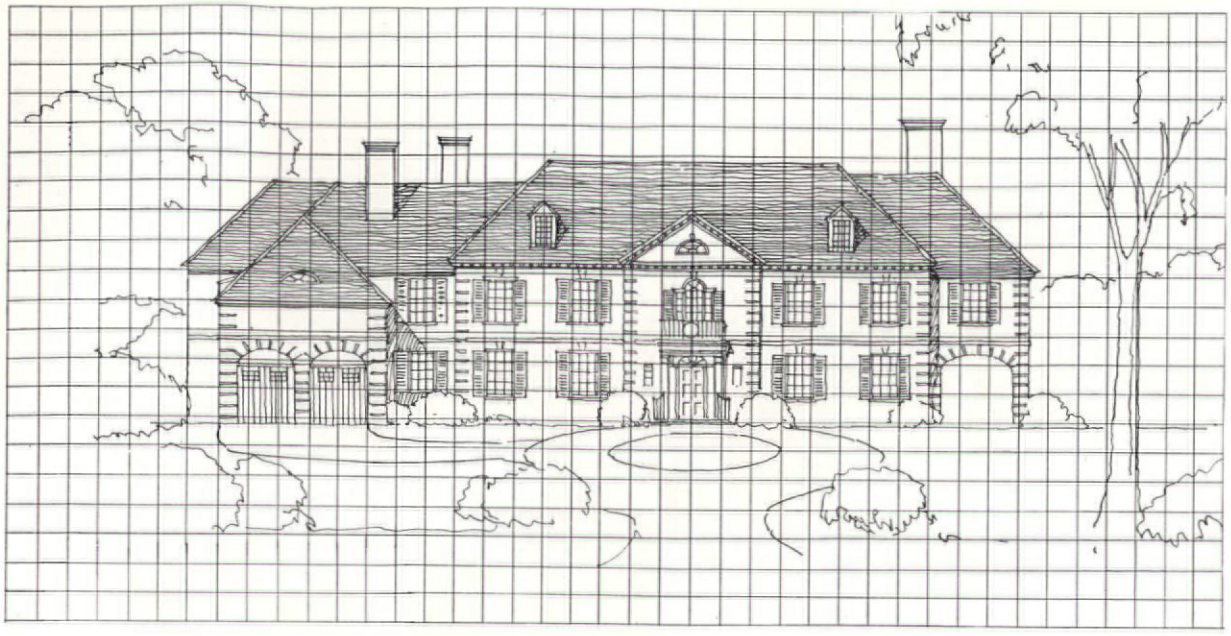
CUBICAL CONTENT OF BUILDING: Approximate cubage—178,000 cu. ft.

Approximate cost per cubic foot—$0.95
Approximate cost of building—$169,000.00

NOTE: The approximate cost of $169,000 does not include the architect's fee, nor the mechanical and structural engineering cost, nor does it include any landscaping or gardening. This cost is assumed for a level piece of property requiring full excavation for basement as required by plan.

PRELIMINARY SKETCH, HOUSE FOR MR. JOHN SMITH, GRAND RAPIDS, MICHIGAN

Two-story and part basement. Brick Colonial design. No third floor. Brick veneer backed up with terra cotta and stud partitions. Cost to approximate $75,000.



PROPOSED HOUSE FOR MR. WILLIAM JONES, COLUMBUS, OHIO
OFFICE OF JOHN RUSSELL POPE, ARCHITECT

ONCE THE CUBAGE IS KNOWN THE COST OF CONSTRUCTION CAN BE COMPUTED

PROGRAM:

First Floor

(Main House 65′ x 36′, 35′ height)

Living Room	22′ x 34′,	11′ ceiling
Dining Room	18′ x 22′,	11′ ceiling
Library or Den	12′ x 16′,	11′ ceiling
Great Hall (circular stairway at end)	16′ x 26′,	11′ ceiling
Vestibule, Coats, Toilet, Small Hall, etc.		

(Service 31′ x 26′, 24′ x 41′, 30′ height, 20′ height)

Kitchen	15′ x 22′,	10′ ceiling
Pantry, etc	7′ x 22′,	10′ ceiling
Hall and Stairway	7′ x 22′,	10′ ceiling
Servants' Hall	12′ x 16′,	10′ ceiling
Garage (3 cars)	22′ x 30′,	10′ ceiling
Work space	8′ x 10′,	10′ ceiling
Porch	6′ x 16′,	10′ ceiling

Second Floor

One Bedroom	16′ x 20′,	9′ ceiling
2 Bedrooms or Dressing Rooms	13′ x 16′,	9′ ceiling
3 Bedrooms	13′ x 16′,	9′ ceiling
4 Bedrooms	13′ x 16′,	9′ ceiling
5 Bedrooms	16′ x 16′,	9′ ceiling
4 Baths and closets		9′ ceiling
Stair Hall	16′ x 20′,	9′ ceiling

Service

Nurse's Room	12′ x 12′,	8′ ceiling
Maid's Room	9′ x 12′,	8′ ceiling
Chef's Room	9′ x 12′,	8′ ceiling
Chauffeur's Room	12′ x 12′,	8′ ceiling
3 Baths and closets		8′ ceiling

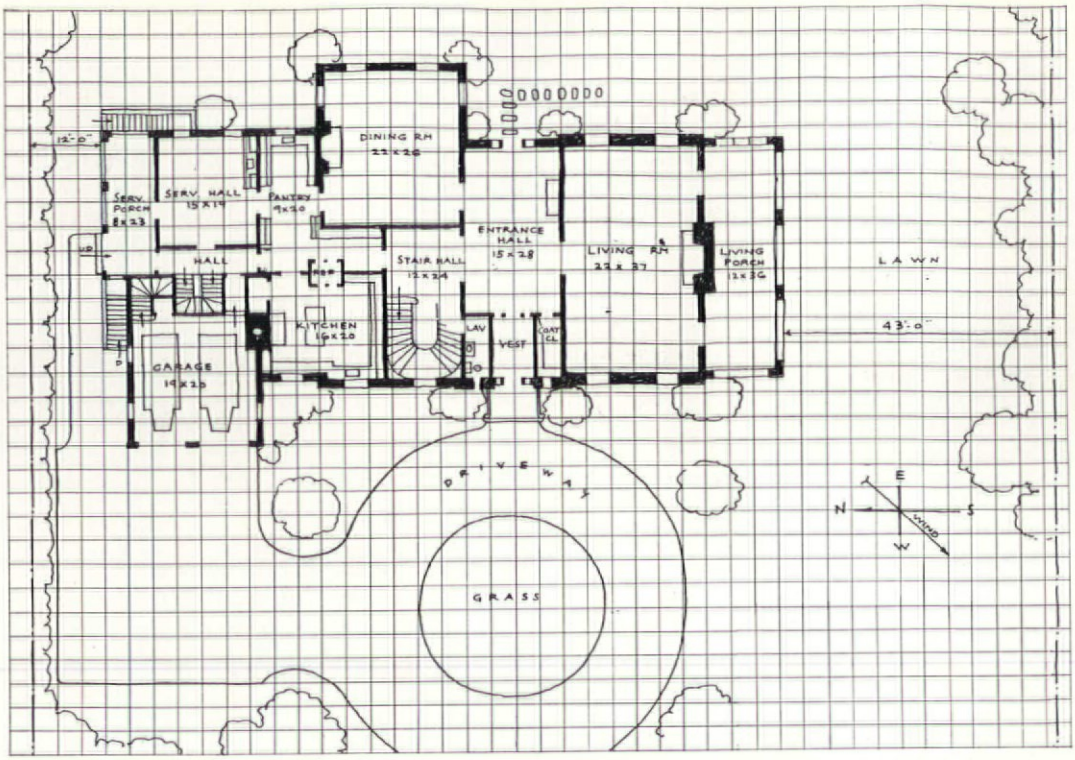
Basement

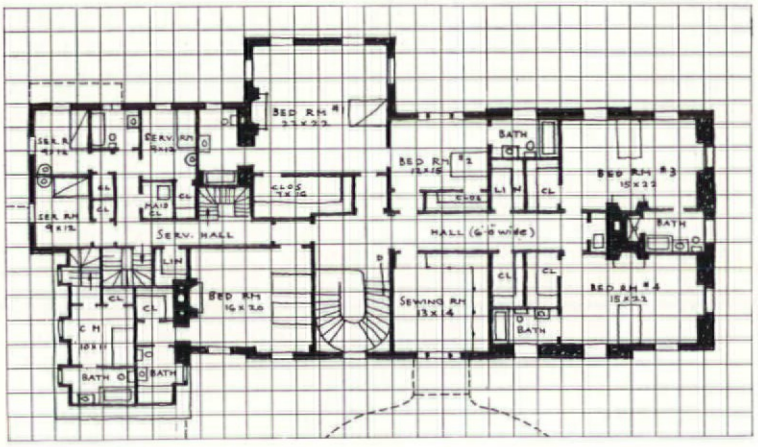
Laundry
Boiler Room
Storage, etc.

APPROXIMATE CUBAGE

Main House

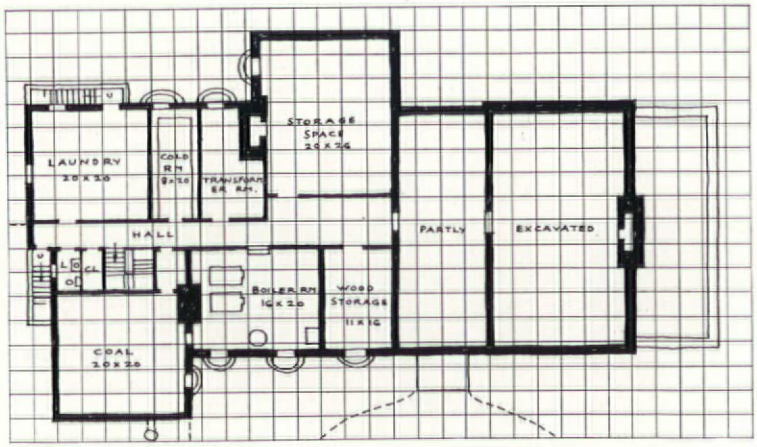
	cu. ft.	cost
(36′ x 65′ x 35′)	71,900	
(unexcavated) (40′ x 36′ x 5′)	7,200	
@ 80c per cu. ft.	64,700	$51,760.00
Service		
(31′ x 26′ x 30′)	24,180	
(41′ x 24′ x 20′)	19,680	
@ 60c per cu. ft.	43,860	$26,316.00
Total	108,560	$78,076.00



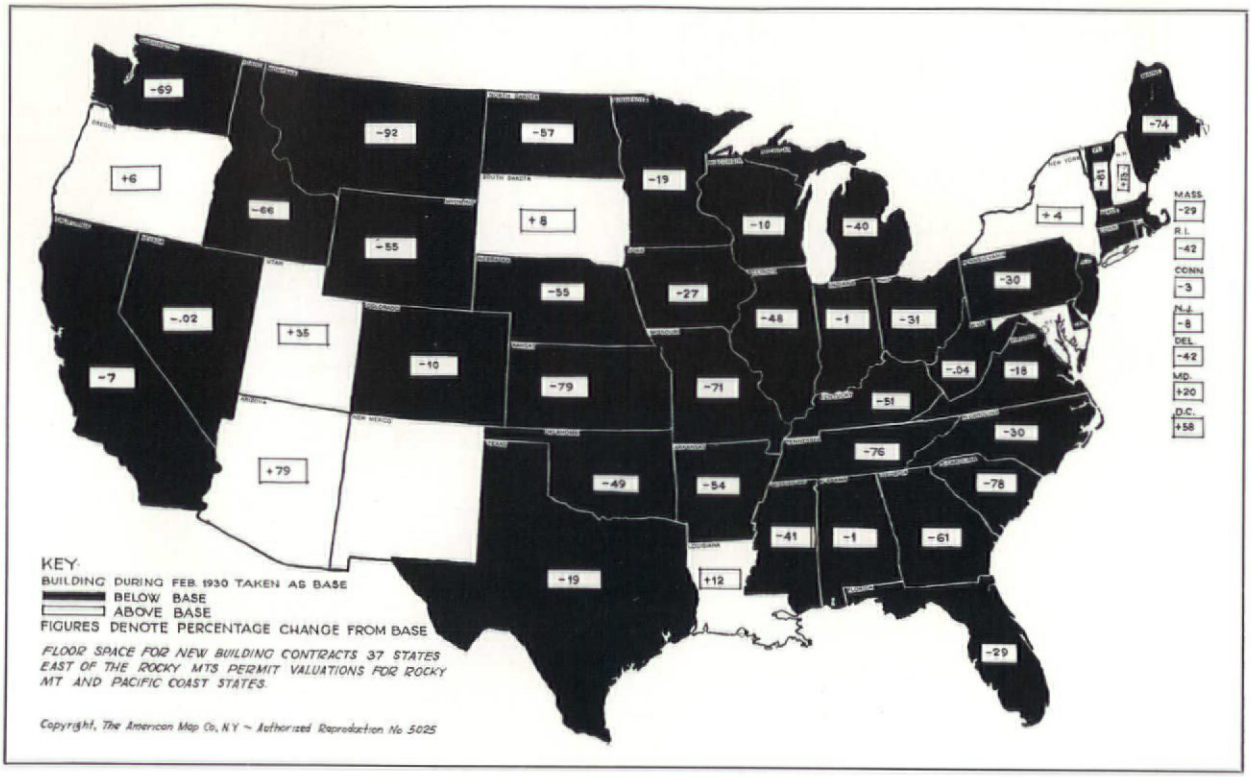


FLOOR PLANS OF HOUSE FOR MR. WILLIAM JONES, COLUMBUS, OHIO

OFFICE OF JOHN RUSSELL POPE, ARCHITECT



FLOOR PLANS ARE LIKEWISE DRAWN ON COORDINATE PAPER, TOGETHER WITH ELEVATIONS (SHOWN ON PRECEDING PAGES) THEY CAN BE USED TO DETERMINE QUICKLY THE CUBAGE AND APPROXIMATE COST OF CONSTRUCTION



Considered from the standpoint of the number of states to show improvement over last year, the February building map is disappointing. In fact, only six states east of the Rocky Mountains show February building contracts larger than in February, 1930; the January map disclosed eight states where current volume was higher than a year ago.

BUILDING TRENDS AND OUTLOOK

PROSPECTS FOR SUBDIVISION HOUSING

By L. SETH SCHNITMAN

Subdivision housing has found expression in two distinct types—the apartment or multifamily house and the single-family dwelling erected in groups by housing developers. Neither has shown distinction in the appreciation of the principles of mass output; of the two, the housing development has made the more slipshod approach. The reason is largely found in the fact that apartment houses are for the most part architect-planned while by far the greater proportion of housing developments are still from private or stock plans.

To be effective mass production requires mass consumption. Whether it be housing or automobiles, vacuum cleaners or cigarettes, this truth is inexorable. Shelter is one of the necessities of life. Mass consumption of housing is as assured as mass consumption of simple foods. But as in the case of food, tastes for housing are ever-changing. Rising living standards have evolved an American diet far different from that of a generation ago; in like manner changing social and economic conditions are now forcing a new taste for shelter.

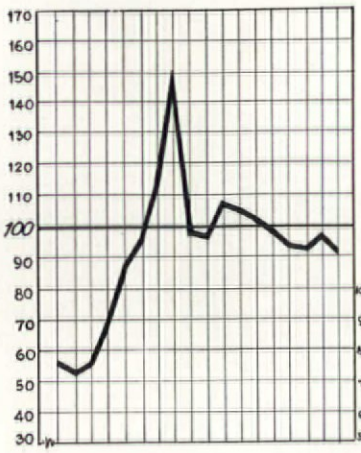
The consumer taste for single-family dwellings erected by housing developers has been waning consistently since 1925, judging from records of new construction. In that year the housing development enjoyed its largest expansion, both in number of new buildings undertaken and total valuation. Since then the trend of new construction of this dwelling type has been continuously downward. In fact, new housing developments undertaken in 1930 were smaller in volume than in any previous year of record; i.e., lower than at any time in at least eleven years.

This tremendous retrenchment in mass-production of housing of the development type started about three years before the general decline in residential

(Continued on page 90, advertising section)

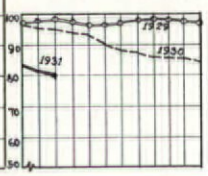
WHOLESALE PRICES FOR BUILDING MATERIALS

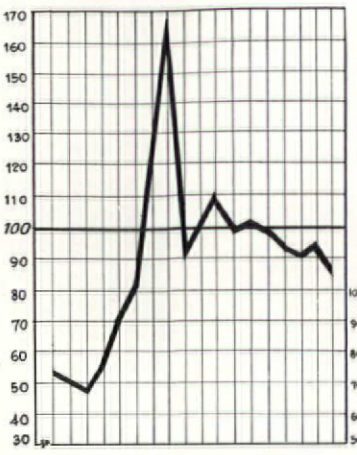
1926 Monthly Average = 100



GENERAL INDEX

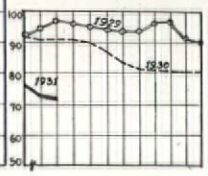
Although materials have declined further the index is still above general commodity level. The divergence suggests further readjustment.

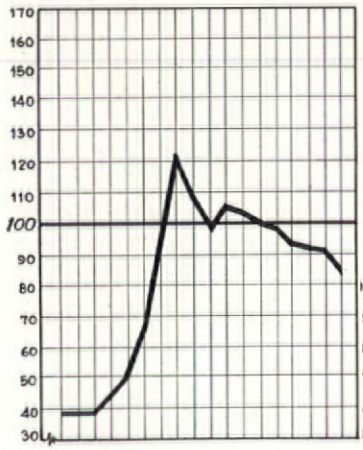




LUMBER

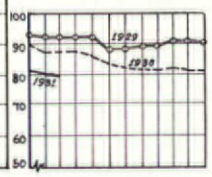
Prices have not yet shown sustained ability to stabilize. Unless recovery in residential building becomes more wide-spread prices will weaken further.

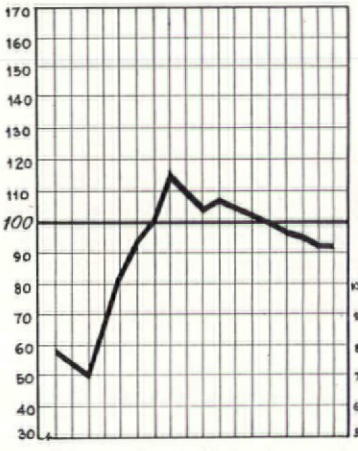




BRICK

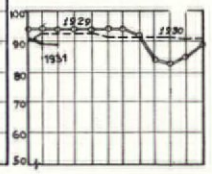
Prices for brick indicate that present levels may be further tested in the light of declines in total building volume that seem indicated for immediate future as compared with last year.

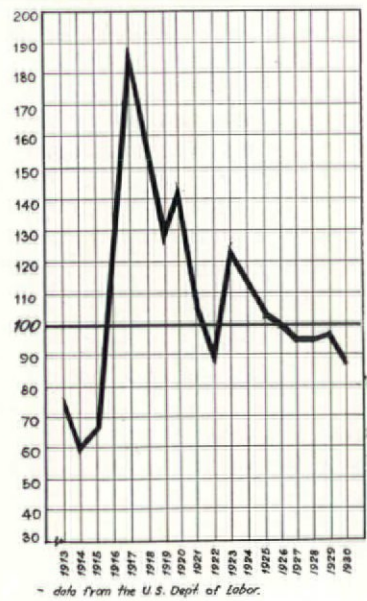




CEMENT

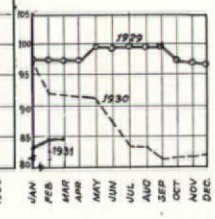
Cement prices will probably show only slight further change in the next few months with the probability that any further change may be on the side of decrease.

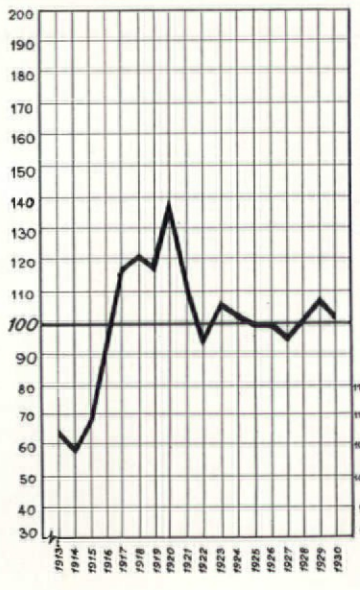




STRUCTURAL STEEL

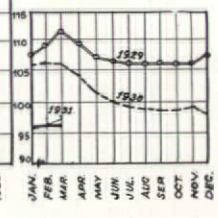
The price rise in structural steel in the past few weeks cannot be taken to definitely indicate a rising trend. The present level will be severely tested in the next few months.





OTHER MATERIALS

Other materials will show such price changes as will be dictated by conditions within the building industry, moving rather in sympathy with the trend in new construction.



- data from the U.S. Dept. of Labor.

ANNOUNCEMENTS AND NOTES IN BRIEF

After April 5 the new address of Shattuck and Layer, architects, will be 221 North La Salle Street, Chicago. The office of Fred P. Cozad, architect, is now located in the La Salle-Wacker Building, Chicago.

Charles P. Rawson, architect, has changed his address from 4416 Hazel Avenue to 4556 North Paulina Street, Chicago.

Maxwell A. Cantor, formerly of Ricca and Cantor, announces the opening of a new office at 188 Joralemon Street, Brooklyn, New York.

Holler and Kleinhenz, architects, announce the removal of their office from 1012 Gates Avenue, Brooklyn, to Guaranty Title Buliding, 89-64—163rd Street, Jamaica.

T. T. Taylor Company, Inc., contractors and builders, announce the removal of their offices to suite 504, The Commercial National Bank Building, Washington, D. C.

Shirley Owens, Fillmore Harty and Cyril Lewis announce the opening of their studio for the practice of architecture and interior decoration: Box 102, Dearborn, Michigan.

ARC WELDING PRIZE COMPETITION

The Lincoln Electric Company of Cleveland announces a second competition for best papers submitted as descriptions of machines, structures or buildings designed so that arc welding is employed in the manufacture.

Substantial prizes, including a first prize of $7500, are offered. Closing date is October 1. Particulars may be obtained from the Lincoln Electric Company.

SUMMER SCHOOL

The summer session of the Department of Architecture, New York University, will begin June 15. The courses will extend over a period of six weeks. They are held in the evening and students can gain practical experience by working in architects' offices during the day. For information, address the Secretary, Department of Architecture, New York University, 250 East 53rd Street, New York City. Bulletin will be furnished upon request.

STEEL BRIDGE COMPETITION

The American Institute of Steel Construction will this year select the most beautiful bridge in three distinct classes from all those erected of steel during 1930. The bridges judged to be the most beautiful will be decorated with bronze plaques. The award in 1928 went to the Sixth Street Bridge in Pittsburgh. Last year the awards went to the Mount Hope Bridge in Rhode Island and to the Mount Pleasant Bridge in Westchester, New York.

Three first awards to the most beautiful bridge in each of three classes will be made this year; one to the bridge costing more than a million dollars, another where the cost lies between one-half million and one million dollars, and the other to a bridge costing less than half a million dollars.

The jury will meet on June 10 next to make their selections. Entrants may any time prior to that date submit photographs and descriptive data to the American Institute of Steel Construction, Inc., 200 Madison Avenue, New York City.

CALENDAR OF EVENTS AND COMPETITIONS

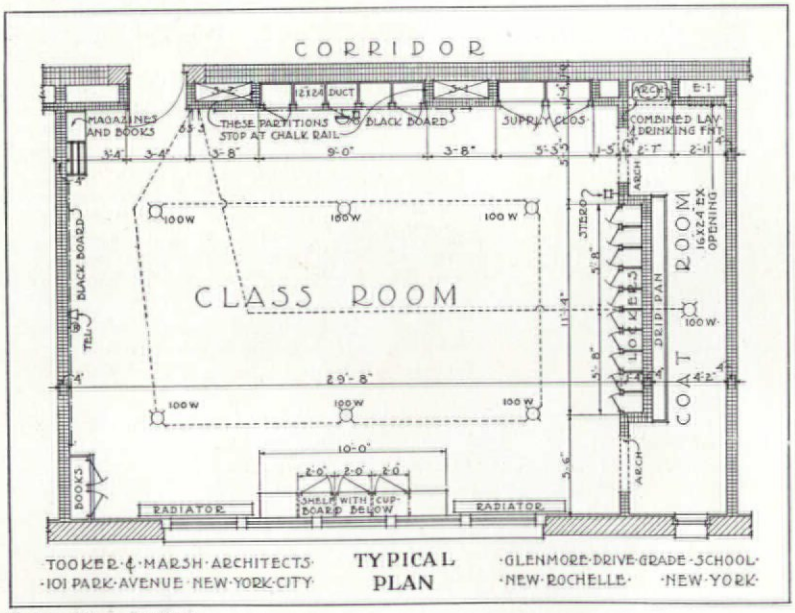
April	Second International Congress and Exhibition of Sanitary Engineering and Municipal Hygiene, Milan, Italy. For information, apply to the Secretary General, Congress Internazionale di Tecnica Sanitaria e di Igiene Urbanistica, Milano, Piazza del Duomo 17.
April 2, 3	Preliminary examinations for the Rotch Traveling Scholarship.
April 3	Architectural students wishing to enter a competition for "the design of the most beautiful highway bridge in steel" are invited to submit to the American Institute of Steel Construction, 200 Madison Avenue, New York City, their preliminary sketches to be placed in judgment on this date.
April 3	Lecture by Ralph Walker, architect, on "Functionalism in Architecture," New School for Social Research, New York City.
Until April 4	House and Garden Exposition, Grand Central Palace, New York City.
April 7-May 2	Exhibition of Ideal Homes, London (Olympia).
April 10	Lecture by Ely Jacques Kahn, architect, on "Evolution of Architectural Design," New School for Social Research, New York City.
April 13-15	Eighth annual meeting of Producers' Council, Inc., San Antonio, Texas.
April 14-16	Convention of American Institute of Architects, San Antonio, Texas.
April 17	Lecture by Harvey W. Corbett, architect, on "Architect and Customer," New School for Social Research, New York City.
April 18	Closing date for applications for Princeton Prizes in Architecture. Address the Director, School of Architecture, Princeton University, Princeton, N. J.
April 18-25	Fourth Biennial Architectural and Allied Arts Exposition, Grand Central Palace, New York City.
April 27	Lecture by C. H. van der Leeuw of Rotterdam on "A Modern Factory," New School for Social Research, New York City.
Until May 29	Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).
May 4-Aug. 8	Art Exhibition, Royal Academy, London (Burlington House).
May-August	Art Exhibition, Royal Scottish Academy, Edinburgh.
June 1-5	International Town Planning and Housing Federation Congress, Berlin.
June 10	Judgment of entries for Steel Bridge Competition. Address American Institute of Steel Construction, 200 Madison Ave., New York City.
July 10-Aug. 30	Vacation-study tour of housing, arranged and directed by The Garden Cities and Town Planning Association, London, in cooperation with the City Affairs Committee, 112 East 19th Street, New York City. For information, address Helen Alfred, Housing Chairman.
October 1	Closing date for entries for Lincoln Arc Welding Prize competition. Address inquiries to the Lincoln Electric Company. Cleveland, Ohio
November	Exposition of Indian Tribal Arts, Grand Central Art Galleries.
October-December	Art Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).
December 1	Closing date for entries in 1931 Better Homes in America Competition. Address c/o American Institute of Architects, 1741 New York Ave., Washington, D. C.

Weber

ELEMENTARY SCHOOL, NORWOOD, MASSACHUSETTS
McLAUGHLIN AND BURR, ARCHITECTS

Weber

ELEMENTARY SCHOOL, SOUTH WALPOLE, MASSACHUSETTS
McLAUGHLIN AND BURR, ARCHITECTS



Courtesy of N. L. Engelhardt

The May Issue
SCHOOLS

This issue will feature the individual school and the group school building. In the PORTFOLIO will be a series of photographic plates and details of schools recently completed. These will include, among others, The Beaver Country Day School by Gordon Allen, architect; the Roxbury Memorial High School at Boston by Harrison Atwood, architect; a school in Massachusetts by Kilham, Hopkins and Greeley, architects; and the Western Theological Seminary at Evanston, Illinois, by Armstrong, Furst and Tilton, architects.

An article on Junior High Schools by Ralph W. Yardley, associate architect of the Chicago Board of Education, will be illustrated by plans and views of the Von Steuben School by Paul Gerhardt, architect. Requirements of equipment, arrangement and cost restrictions will be discussed.

The TECHNICAL NEWS AND RESEARCH article will be "Planning Elementary Classrooms to Meet Present-Day Needs," by Prof. N. L. Engelhardt of Teachers' College, Columbia University.

Other features of the issue:

A remodeled residence by Rodgers and Poor, architects.

A branch bank in New York City by Eugene Schoen.

Views of recent additions to the Van Nelle factory in Rotterdam, Holland, by Brinkman and Van der Vlugt, architects.

Photographs of landscape architecture, including work done by Olmsted Brothers.

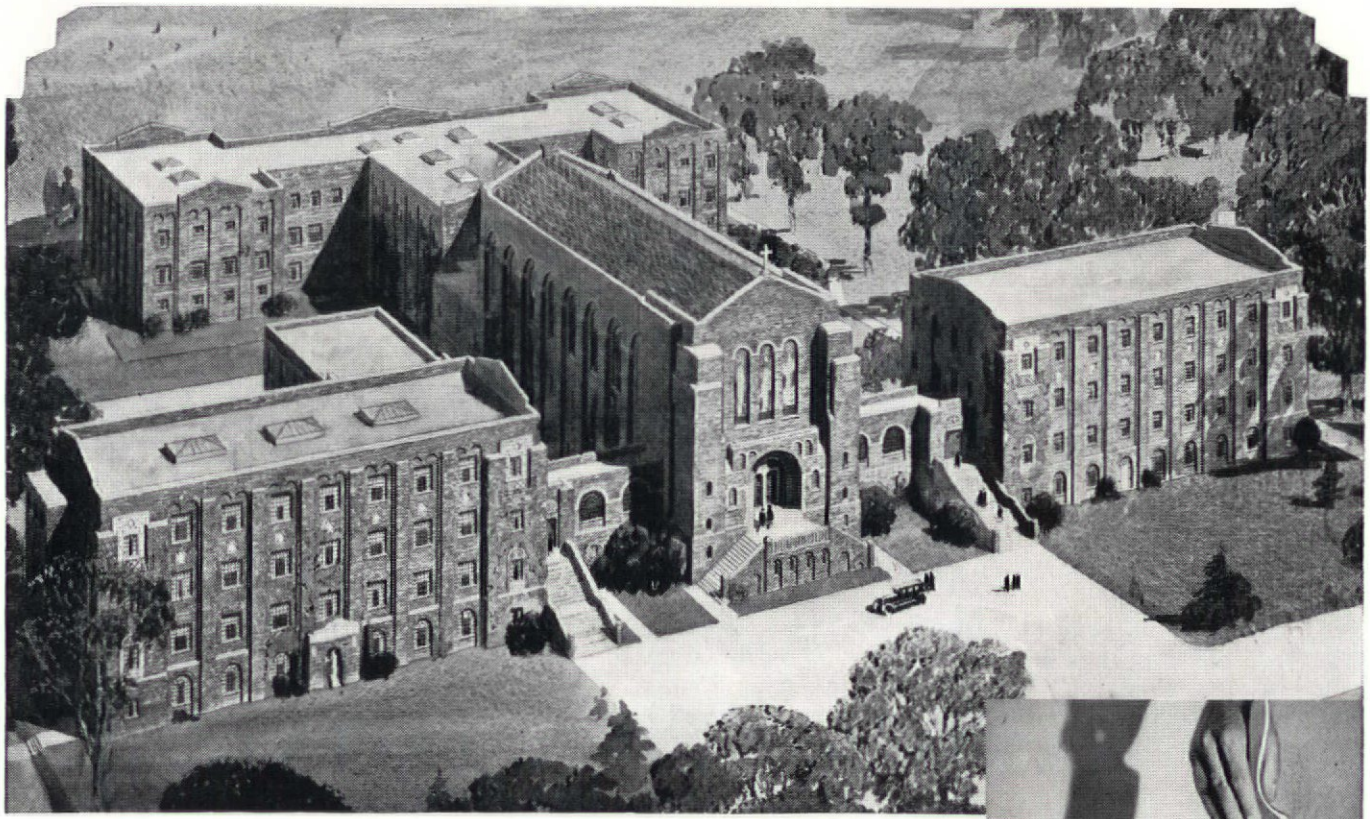
A method of filing blueprints, described and illustrated by Erich Schmied.

New inventions and technical developments which step up domestic economy, annotated by Gayne T. K. Norton.

An article by Parker Morse Hooper on means of developing business.

A contrast of architects' fees in relation to getting business, based on the office practice of Robert D. Kohn and Shreve, Lamb and Harmon, architects.

. . and Interiors, too . . are *lastingly beautiful*



St. Joseph's Normal Institute, Barrytown, N. Y. Architect—James W. O'Connor Associate Architects, James F. Delany, Paul Schulz.

THE buildings of St. Joseph's Normal Institute at Barrytown, New York—both in their exterior construction and their interior finish—have been endowed to a remarkable degree with *lasting* beauty and charm.

Painted surfaces within the buildings were done with Barreled Sunlight . . . the smooth, flawless paint enamel that can't hold dirt embedded. Finger prints . . . smudges . . . dust . . . may easily be wiped off with a damp cloth.

And Barreled Sunlight retains its soft depth—handsome cleanliness—after repeated washings. Its extreme durability reduces the necessity for frequent repainting.

An all-oil product, Barreled Sunlight is easily tinted in soft pleasant colors appropriate to the harmonious needs of any room.

Our catalogue is in Sweets, but for your own files let us send you the new booklet, "For Interiors of Lasting Beauty and Cleanliness." Write to U. S. Gutta Percha Paint Co., 22-D Dudley Street, Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

BARRELED SUNLIGHT is available in two forms, Interior and Outside. Write for complete information on Outside Barreled Sunlight—its pronounced whiteness, richer lustre, marked durability.

Barreled Sunlight

Reg. U. S. Pat. Off.

(*Continued from page 363, editorial section*)

building and while business generally was rising to ever-higher levels. Quite obviously then the decline in dwelling construction of this type mirrors more than a mere curtailment dictated by changes in fundamental business conditions. Rather is it probable that the loss reflects a very definite swing of public taste away from that type of shelter which in the past has been largely jerry-built.

The housing development dwelling type was essentially designed to meet the demands of the low- and moderate-income groups. Through 1925 this end appears to have been accomplished, but with the increasing competition for the consumer's dollar and a growing repulsion to jerry-built dwellings there has since been a very definite turn. Even though about 80 per cent of the total number of dwellings erected by housing developers had contract values under $8000, the market for such new dwellings has slipped sharply. The loss has been to the gain of apartments and owner-built single-family houses. As a matter of contrast, such dwellings under the $8000 contract valuation have represented about 70 per cent of the total number of new owner-built houses.

The three-year period, 1926 through 1928, was one when business and industry were generally healthy, when employment was relatively full, when wages were regular, and when consumer budgets could be set and realized. Yet this period showed an average annual decline in new dwelling construction of the development type of 21 per cent from the year 1925, when measured either in number of dwellings or in aggregate valuation. It is difficult to say just how the housing dollars of the three-year period ended 1928 were diverted from the housing development, though this diversion averaged at least $150,000,000 per year in contrast with the 1925 peak.

Housing developments, however, have lacked quality; all too frequently they have been of flimsy construction; they have provided shelter but at what price! This dwelling type has added little to community beauty. It has occasioned large increases in tax rates to provide the necessary roads and other municipal improvements such as curbing, light, water and sewage mains, some of which are doubtful assets that will take years to liquidate.

Zoning commissions, where they existed, were for the most part concerned little with the methodical improvement of land on the outer fringes of our cities where housing developments took root principally, so that now the rising burden of taxation caused by municipal extravagances is approaching the breaking point.

It is seriously doubted that the next cycle of residential building will find the housing development of as proportionately large importance as in the cycle which ended in 1928. Technologic developments will very likely bring forward a new form of housing for the classes previously reached by the housing development dwelling type. In this the fabrication of housing units by factory methods will likely bring with it some solution of the housing problem to reach the masses. But mass production of housing units will probably find its fullest expression in a further extension of the economies in apartment house construction. Here the economic-minded architect will provide the necessary design to meet the changing tastes for housing while at the same time subdividers will continue to reassemble lots in subdivisions that have gone stale in recognition of the probability that such sections are more adapted to apartment house development than to jerry-built dwellings.

•

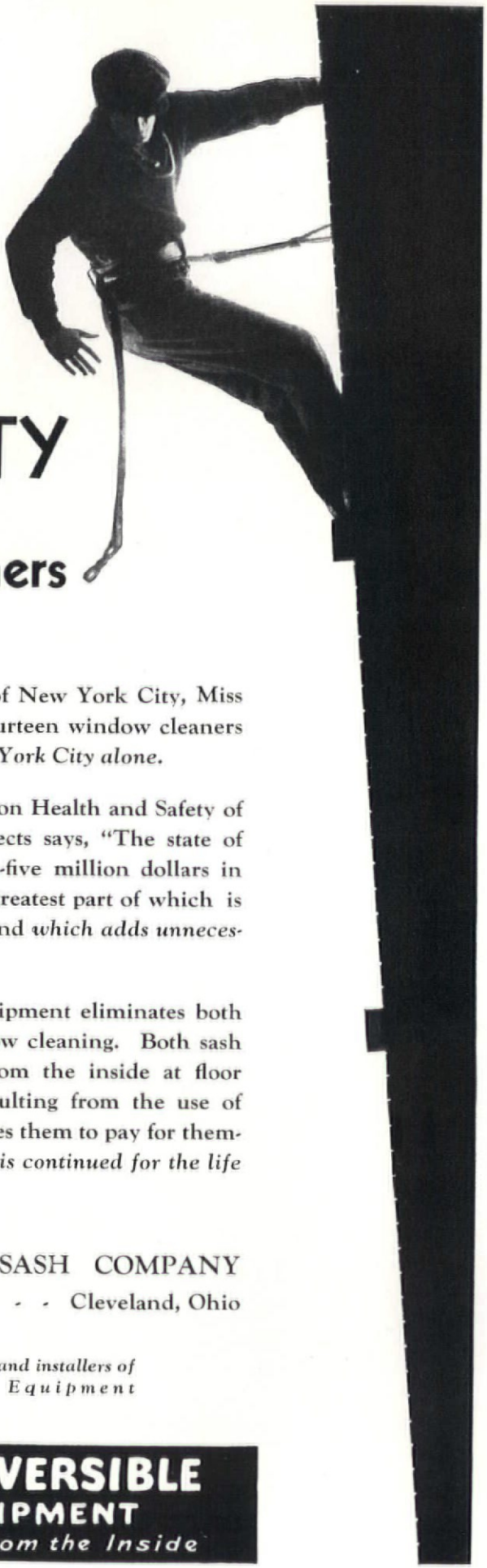
Development housing in 1930, as measured by new contract valuations, was 75 per cent smaller in volume than in 1925, the peak year. Two fifths of the entire loss in the annual trend in housing developments between the years 1925 and 1930 had occurred by the end of 1928.

It is of additional significance to note that the actual loss for 1930 as contrasted with 1928 was 65 per cent, much greater in fact than the registered loss of 38 per cent as between the two periods for owner-built single-family dwellings. That the collapse of development building has been so complete and has extended over so long a period might provide hope for early revival. But these conditions alone cannot bring back large activity. Bankers and mortgage companies are more conscious of the economics of dwelling construction and consumer tastes than ever before. Their experiences growing out of the last wave in this type of speculative building are still fresh in mind. It does not appear likely, under these circumstances, that any great wave of development building is in the making.

•

The first month of 1931 showed a further sharp drop in the trend of development dwelling construction; with the February record a reversal was in evidence, the first upward turn in many months; preliminary March figures (based upon records through March 21) indicate that the upward trend in February may carry through for March. Conclusive evidence is still lacking that the recession in this type of dwelling construction has definitely come to an end. None the less it appears from the record for the first quarter of 1931 that the deflation here is at least nearly completed and that from this point forward the factors of financing, lowered construction costs, technologic improvements and appreciation of consumer demand and tastes will become of increasing importance in the determination of the extent of recovery since it appears that

(*Continued on page 92, advertising section*)



PLEA for SAFETY
Of Window Cleaners

THE industrial commissioner of New York City, Miss Frances Perkins, states that fourteen window cleaners fell to their death last year *in New York City alone.*

The Chairman on the Committee on Health and Safety of the American Institute of Architects says, "The state of New York paid more than thirty-five million dollars in settlement of cases last year, the greatest part of which is charged to the building industry, and *which adds unnecessarily to the cost of building.*"

Williams Reversible Window Equipment eliminates both the cost and risk of outside window cleaning. Both sash completely reversible—cleaned from the inside at floor level. The substantial saving resulting from the use of Williams equipped windows enables them to pay for themselves in a few years. *This saving is continued for the life of the building!*

THE WILLIAMS PIVOT SASH COMPANY
East 37th St. at Perkins Avenue - - - Cleveland, Ohio

For 27 years manufacturers and installers of
Reversible Window Equipment

WILLIAMS REVERSIBLE
WINDOW EQUIPMENT
Clean Your Windows from the Inside

(*Continued from page 90, advertising section*)

this type of dwelling construction has moved in the past and can move again quite apart from the general movements in business.

•

For residential building as a whole the first quarter of 1931 was only slightly behind the corresponding quarter of 1930 (as based upon data through March 21). Through the last two months of the quarter residential contracts were running ahead of the corresponding period of 1930; January alone accounted for the loss shown in the quarterly total.

Short term prospects would indicate that the second quarter of the year, for residential building, likewise will be not far different from the corresponding quarter of 1930, and that April alone, of the months taken separately, will probably fall short of attaining the level reported for that month in 1930.

In the meantime the problem of determining the time for profitable new private building undertakings still obtains and presses for solution. In the past year prices for materials have gone off sharply, efficiency of building artisans has risen materially, and the net effect has been translated into a sizable reduction in construction costs. From this standpoint alone it might appear that the time for undertaking new construction is definitely at hand for interests who have deferred building operations. Nevertheless, cost considerations are not yet the final determinant on the part of prospective investors, since in many quarters fundamental readjustments are necessary in existing real estate conditions. Only in those sectors where the necessary readjustment has been largely completed can lowered construction costs operate as a persuasive factor for new building operations. Today the probable trend of rentals is certainly of as much moment as the trend of construction costs. More than ever before in recent years is it now necessary to consider vitally the importance of the rental curve.

That the revival in building has not yet definitely manifested itself in all likelihood mirrors doubt as to the trend in rentals more than the factor of costs, though of course demand for space is the ultimate determinant for new building undertakings.

Although building material prices have been declining for many months and are now at a lower level than at any time since the spring of 1917, the general index is still materially above the general level of other commodities at wholesale. The divergence between the two indexes suggests further readjustment. This can come about either by a recovery in general commodity prices as building materials remain stationary or decline further, or with building material prices showing a further descent, more rapid than any new declines in general prices.

With a sluggish building volume indicated for the next few months, and with business prospects generally unsettled, it appears that the readjustment will in all probability proceed from either one or the other or from both of the two latter considerations.

It now appears as a reasonable certainty that building material prices may soon be entering a period when, in reflection of lowered demand, they will fall under the general commodity wholesale level much as was the case for the seven-year period from the beginning of 1913 to the beginning of 1920.

CONSTRUCTION RESULTS: FIRST QUARTER 1931 (PRELIMINARY)

Prospects for general building in Southern New England probably are somewhat better than they are for Maine, New Hampshire and Vermont, with Massachusetts giving promise of a larger contract total for the first quarter of 1931 than was registered in the corresponding period of 1930. For the metropolitan area of New York the current quarter will show a large loss from the corresponding period of 1930, principally because of indicated declines in commercial and industrial building, although residential building has shown a good gain.

For the upstate New York territory, present prospects indicate a contract total for nonresidential building during the current quarter about at the level of a year ago. Contracts for residential building should approximate also the awards of the corresponding quarter of 1930; awards for public works and utilities, however, will show a loss for the quarter.

For the Middle Atlantic territory, first-quarter results both for residential and nonresidential building are not bright, while for public works and utilities a large decline from a year ago is indicated. The Pittsburgh territory as well as the Southeastern territory will show losses in contract totals for each major construction group when contrasted with the corresponding quarter of 1930.

Declines in the St. Louis and Kansas City districts are in prospect for the current quarter as compared with a year ago. For Texas, construction conditions are relatively better with indications that contracts for the current quarter will approximate conditions of a year ago.

For the New Orleans territory further retrenchment in nonresidential building will more than offset indicated gains in residential building and leave a net building volume for the quarter somewhat under a year ago.

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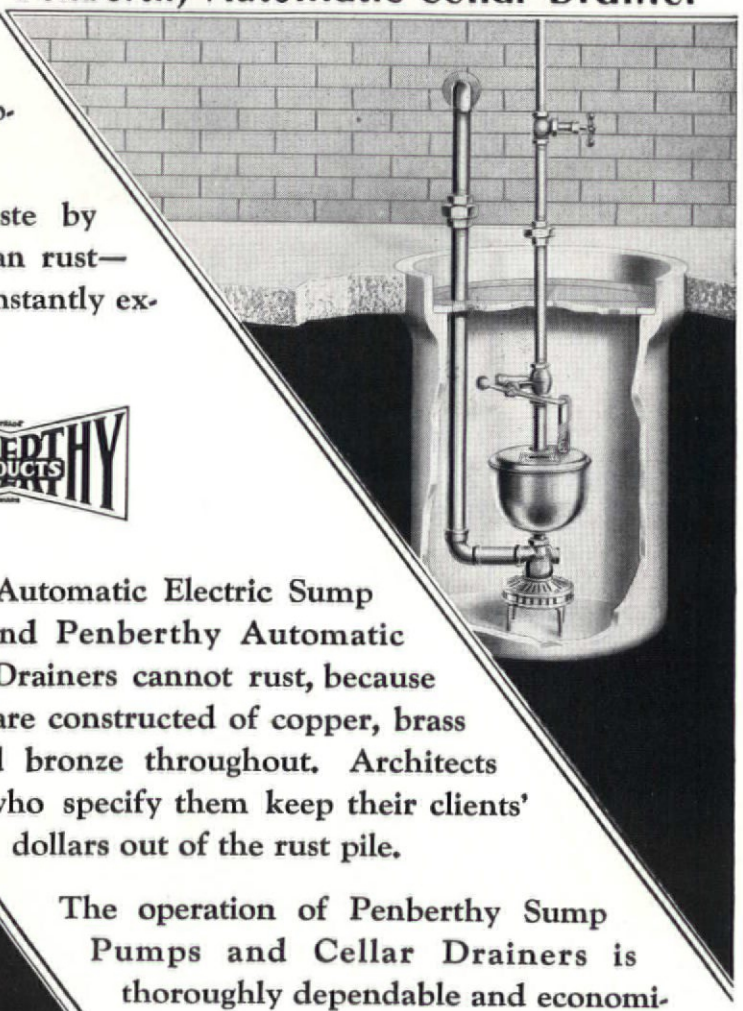

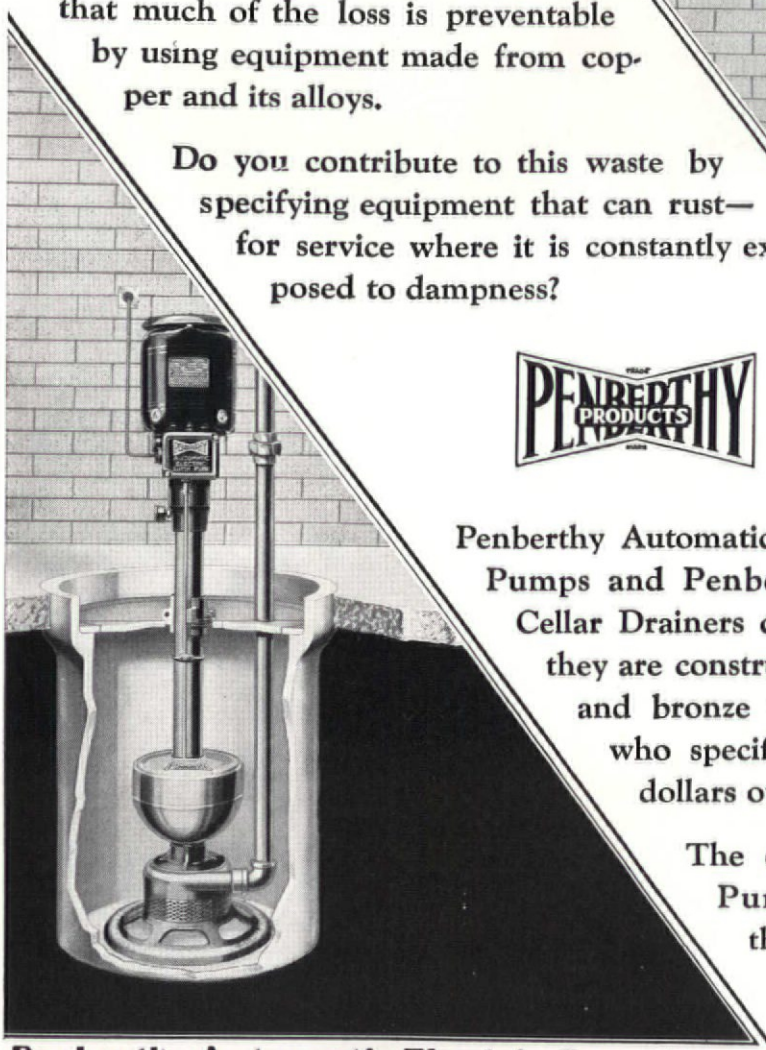

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NEWS IN BRIEF

ADVANCED ARCHITECTURAL TRAINING

The New School for Social Research announces an advanced professional course in architecture, open to fifteen students, graduates of architectural schools or designers in offices. The course begins April 15.

A type of building of current interest will be announced every two months as a subject for study and the effort of the school will be to put at the disposal of students the best and most up-to-date information on this particular category of building. The problems will be attacked more as a series of theses than as *projets*. Students will have access to the findings of the research group in materials and methods.

Specialists outside as well as within the profession will give lectures and conferences. These members of the committee of consultants will be regularly available for advice and help: Albert W. Butt, Jr., Harvey Wiley Corbett, Philip Goodwin, Arthur Harmon, W. K. Harrison, Henry Hofmeister, Raymond Hood, Joseph Hudnut, Ely Jacques Kahn, A. Lawrence Kocher, William Lamb, L. Andrew Reinhard, Robert Rodgers, Joseph Urban and Ralph Walker.

Applications for the spring and summer problems should be made before April 1 to Committee on Membership, Department of Architecture and Fine Arts, New School for Social Research, 66 West 12th Street, New York City. Candidates should submit two letters, preferably from their schools or employers, stating fully their qualifications.

Applications for the 1931–1932 course (five problems of approximately two months each, beginning September 15) should be filed with recommendations not later than May 15.

ROME ACADEMY EXHIBIT

During the past month the work of four fellows who have recently returned from three years' study at the American Academy in Rome has been exhibited at the Fifty-Sixth Street Galleries in New York City.

The exhibitors were Dunbar D. Beck, painter; Homer E. Pfeiffer, architect; Michael Rapuano, landscape architect; and George H. Snowden, sculptor. Mr. Pfeiffer, in addition to travel sketches, exhibited restoration drawings of the Roman library at Timgad. Mr. Rapuano's work featured a restored plan of the gardens at the Villa d'Este in Tivoli.

A BUILDING CONGRESS

From the monthly bulletin of the Illinois Society of Architects:

"The movement to establish a Building Congress in Chicago is gaining momentum. This subject was thoroughly discussed at a recent meeting of the Board of Directors of the Society. It is hoped a strong movement can be started that will establish friendly relations between, and will coordinate the efforts of, architects, bankers, contractors, labor leaders, material dealers and realtors."

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Illustrated above is the Camden Courthouse Annex & Municipal Building. Its architects, Edwards & Green; its builders, the F. W. Mark Construction Company, Inc.; its hardware, Corbin. Note how the Corbin Unit Lock has the Camden City Seal delicately modeled and beautifully executed upon it. This sign manual of ownership is a distinct addition to the attractiveness of the design. Individualized ideas in design can be incorporated in Corbin locks or hardware for your own buildings. . . . Write us today for full information.

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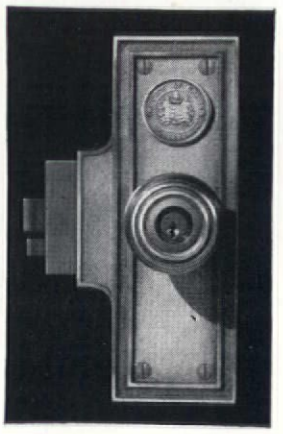

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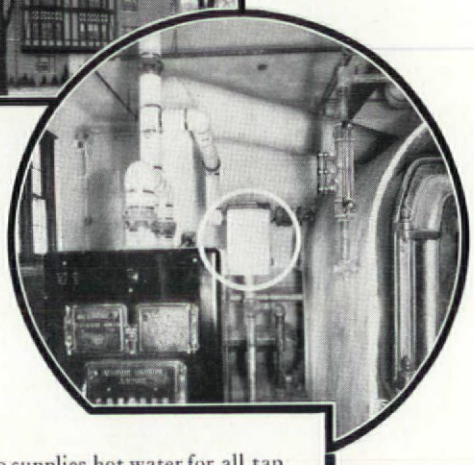

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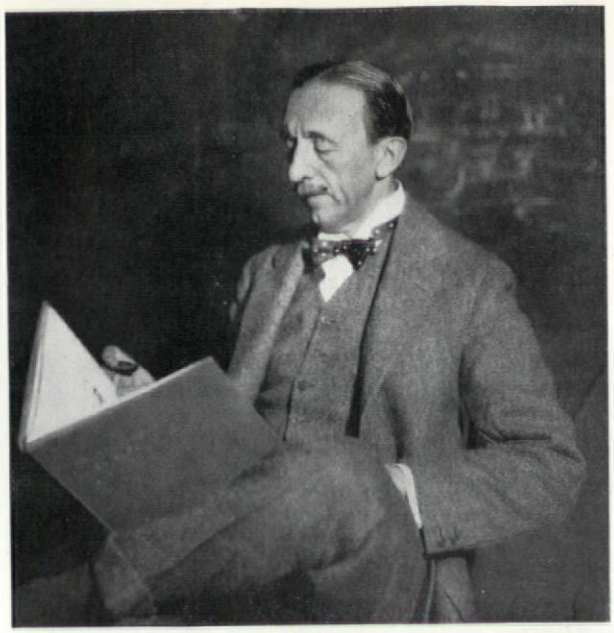

LEON V. SOLON

The craftsmanship medal for 1931 has been awarded to Leon V. Solon by the Board of Directors of the American Institute of Architects in recognition of his "contribution to the Ceramic Art." Presentation of the award will be made April 15 at the Convention of the Institute at San Antonio, Texas.

Mr. Solon is the author of the series of articles on polychromy which appeared in the pages of THE ARCHITECTURAL RECORD. These studies were subsequently published in book form with the title of *Polychromy*.

UNEMPLOYMENT APPEAL

Though there are unmistakable signs of revival in the building industry, unemployment in the architectural profession is still at a high level, according to a report of conditions in the metropolitan district made public by the Architects' Emergency Committee, of which Julian Clarence Levi, Fellow of the American Institute of Architects, is chairman.

The Committee pointed out that, while destitution threatens large numbers of highly trained professional men, New York and other cities are in crying need of their skill. The Producers' Council, an organization of manufacturers and associations of manufacturers, representing a combined capital of $22,500,000,000, joined in urging that architects be enlisted to check the disfigurement of town and country by cheap construction and ugly design.

"In our large cities," the Council asserted, "hundreds of buildings are being designed by people who are not prepared by training or experience to do the work in the proper way. Inferior materials are being used, good materials are used in the wrong way.

"The suburbs of our large cities, like New York, Chicago, and Philadelphia, are being built up by speculative interests in a manner that constitutes not only an artistic disgrace but a fire hazard, and eventually will result in great economic loss."

The Committe has appealed to the architects of New York, New Jersey, and Westchester to con-

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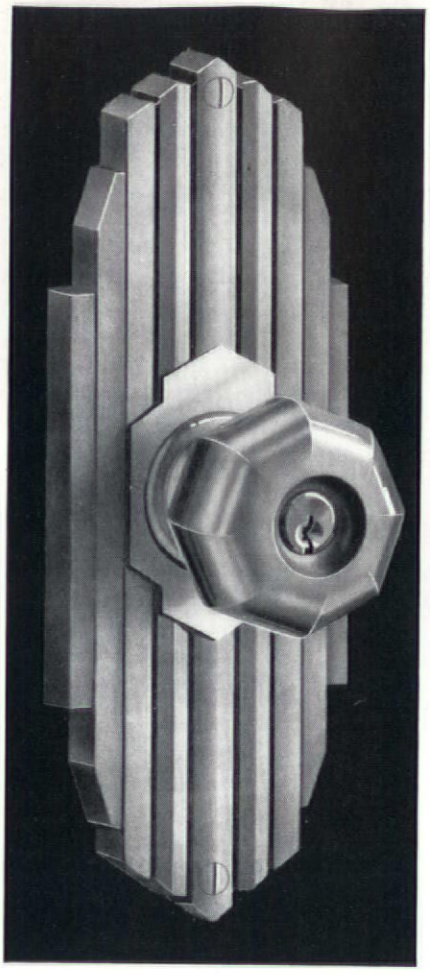

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tribute funds for the aid of idle draftsmen, many of whom are graduates of leading architectural schools here and abroad, and have won distinction in the arts of design.

During the last three months, the Committee reported, nearly 800 draftsmen have registered for employment at the Bureau established at the Architectural League, 115 East 40th Street. Of these, more than 500 were said to be destitute.

Architectural employment has been found for about 120. Those employed through the Emergency Work Bureau were paid out of the Prosser Committee fund on the basis of five dollars a day for a three-day week.

Since no further Prosser Committee funds are available, the Architects' Committee is compelled, it was stated, to raise its own fund from members of the architectural profession.

"We cannot allow this fine body of experienced men to starve," said the appeal. "They must be kept going until business picks up."

All of the money received will be spent for the direct benefit of the unemployed, without deduction for Committee expenses. Pledges of five dollars a week upward, or donations in a lump sum, are asked.

THEO VAN DOESBOURG

Madame Petro van Doesbourg informs The Record of the death of her husband, Theo van Doesbourg. He died suddenly March 7 in Davos, Switzerland.

A painter by profession, van Doesbourg is known to the architectural profession chiefly as editor of the Dutch magazine *De Stijl* which exerted a great influence in the development of the new architecture of Germany and Holland.

LECTURES AT THE NEW SCHOOL

Attention is called to a series of lectures by prominent architects to be given at the New School for Social Research, 66 West Twelfth Street, New York City.

Ralph Walker will lecture on "Functionalism in Architecture" on Friday, April 3; Ely Jacques Kahn on "Evolution of Architectural Design" on Friday, April 10; Harvey Corbett on "Architect and Customer" on Friday, April 17; and C. H. van der Leeuw, of Rotterdam, on "A Modern Factory" on Monday, April 27.

Frank Lloyd Wright gave a lecture at the New School some weeks ago, in which he presented to a packed hall his views of the shortcomings of American architecture. These coming lectures are in no sense intended as an answer to his criticisms, according to an announcement sent out by the New School, but they will in effect serve as an answer to questions as to the creative power and realism of the best work of today. The fourth in the series, by the owner of the famous van Nelle factory in Holland, will offer many suggestions in line with American tendencies.

The lectures are given at 8:30 in the evening. The admission is $1.50. Seats may be reserved in advance at the New School.

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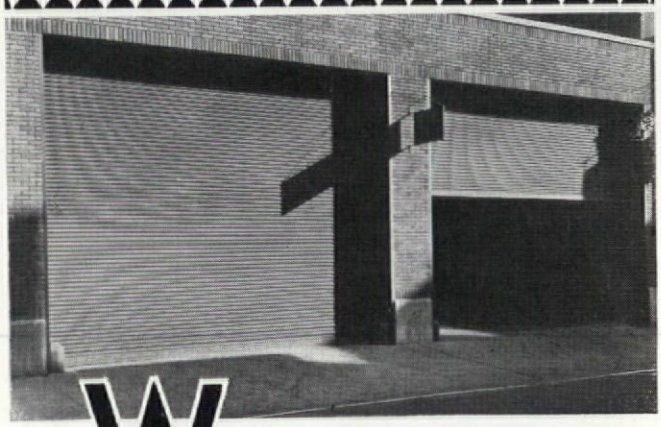

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UNIVERSITIES AND ART

Universities are charged with a lack of artistic taste by Prof. William A. Boring, Director of the School of Architecture of Columbia University. Reasserting the need of a great School of Fine Arts at Morningside, Prof. Boring, in an article which appears in the "Columbia University Quarterly," derides the art efforts of Columbia student publications as "crude and childish." He deplores "a general apathy toward art" at Columbia.

1931 BETTER HOMES COMPETITION

Another competition for best house designs, similar to those featured in this issue of THE RECORD, is announced by James Ford, executive director of Better Homes in America.

The terms of the competition, which will close December 1, 1931, will be the same as those of the preceding year except that the cubage for two-story houses will be raised to 26,000 cubic feet. Plans and photographs will be accepted for houses built between the years 1926 and 1930, inclusive.

All architects are invited so that the 1931 competition may bring to public attention the best small house architecture of America. Awards will be made by a jury of five architects appointed by the President of the American Institute of Architects.

For additional information address Better Homes in America, 1653 Pennsylvania Ave., Washington, D. C.

GUGGENHEIM FELLOWSHIP AWARDS

Four architectural awards, averaging about $2,500 each, are announced by the John Simon Guggenheim Foundation.

The foundation was established six years ago with a capital of $4,500,000 by former Senator and Mrs. Simon Guggenheim in memory of their son. Up to now 372 persons have been assisted by the foundation, the purpose of which is to improve the quality of education and the practice of the arts and professions in the United States, to foster research and to provide for better international understanding.

The holders of the architectural awards:

Dr. Helen Huss Parkhurst, assistant professor of philosophy, Barnard College, Columbia University, will write a book on the aesthetics of architecture abroad. She is author of "Beauty: An Interpretation of Art and the Imaginative Life."

Cecil Clair Briggs, architect, New York City, will make an architectural restoration of the Greek Acropolis, built 400 B. C. at Lindos on the Island of Rhodes.

Francis Henry Taylor, curator in the Pennsylvania Museum of Art, Philadelphia, will study Romanesque sculpture of the Roussillon, with special reference to the sculpture from Saint Genis des Fontaines and the origins of the style of the eleventh century. Author of "Rodin's Influence on Contemporary American Art" and (in collaboration with Professor Gilbert Chinard) of "Houdon in America."

Dr. Ernest T. De Weld, associate professor of art and archaeology, Princeton University, will prepare for publication the second volume of the manuscript of the Psalter of Stuttgart.

THE ARCHITECTURAL RECORD

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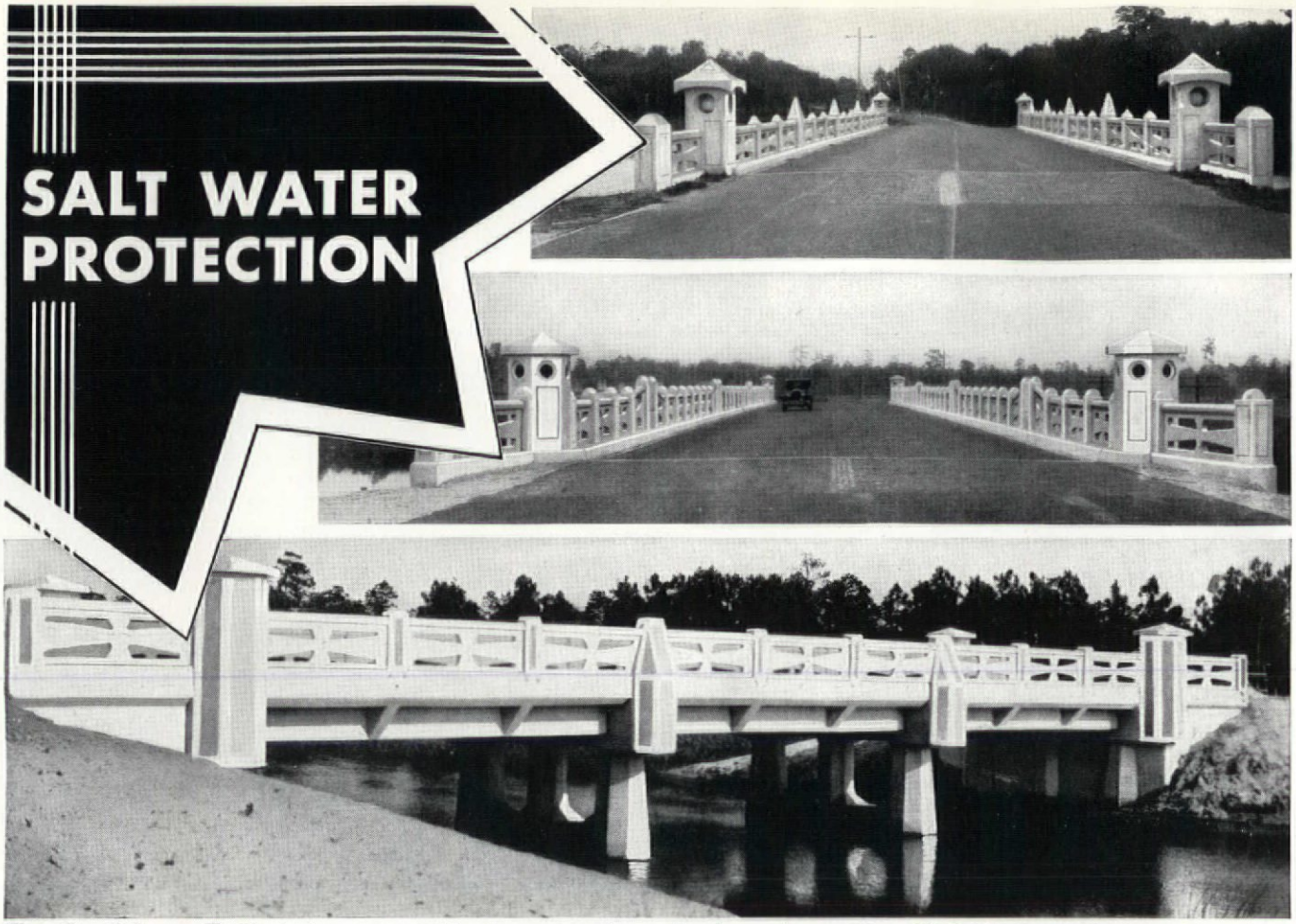

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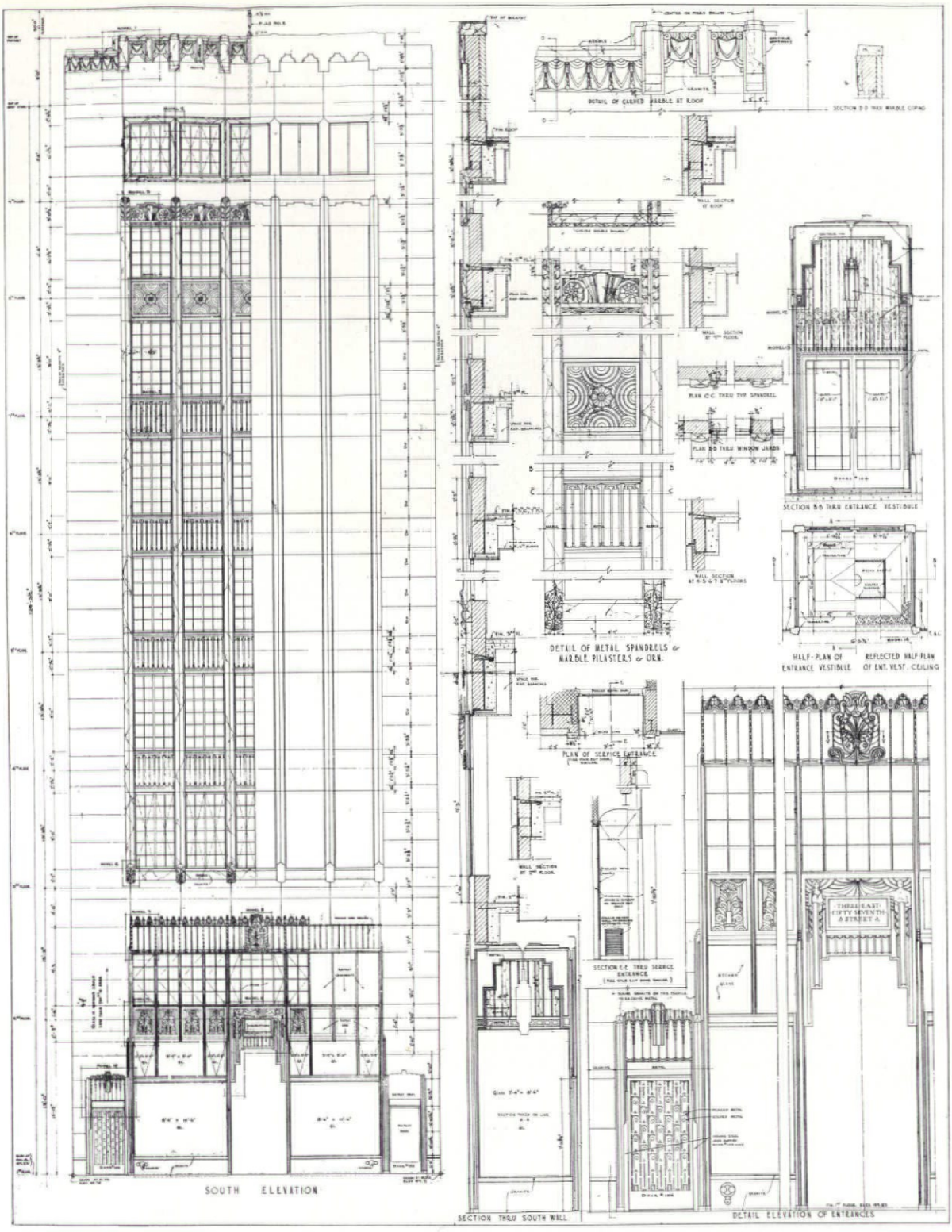
Waterproofing Paste

(INTEGRAL)



WORKING DRAWING OF FACADE
L. P. HOLLANDER COMPANY BUILDING
3 EAST 57TH STREET, NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS

Fischer

L. P. HOLLANDER COMPANY BUILDING
3 EAST 57TH STREET, NEW YORK

Working details of facade
are illustrated on preceding page

SHREVE, LAMB AND HARMON
ARCHITECTS

THE ARCHITECTURAL RECORD

AN ILLUSTRATED MONTHLY MAGAZINE OF ARCHITECTURE & THE ALLIED ARTS & CRAFTS

VOLUME 69 MAY • 1931 NUMBER 5

L. P. HOLLANDER COMPANY BUILDING

NEW YORK CITY

SHREVE, LAMB AND HARMON, ARCHITECTS

The gold medal of the Fifth Avenue Association has recently been awarded to the architects for the design of this building. It was erected in 1930.

This building, comprising nine floors, was designed to serve as a women's specialty shop. It cost approximately $1,000,000, of which seven-tenths was expended for the facade and structure, and three-tenths for interior finish.

The architectural composition of the facade is a lower panel of rich metal work in aluminum for two stories, a shaft of vertical mullions of stone, and an upper panel framed horizontally but carrying the vertical motifs of the shaft. The whole and the various parts are framed in black granite.

The color scheme is silver, gray, and black—the silver of the aluminum metal, the gray of the limestone mullions and trim, and the black of the granite frame.

Originally show windows were intended for both first and second floors. The two small side doors—one a service entrance and the other a fire exit—have been designed as flanking motifs. These doors are ornamented grilles, metal plates with a pierced design for admission of light.

Because the building is a shop for women, the lower feature has been kept delicate and rich. The ornamental motifs are feminine in character and there is much suggestion of drapery. The models are the work of Maxfield Keck.

The interior floors and furnishings were designed by Jock D. Peters, collaborating with Eleanor LeMaire. Views and plans of these were illustrated in the January issue of THE RECORD.

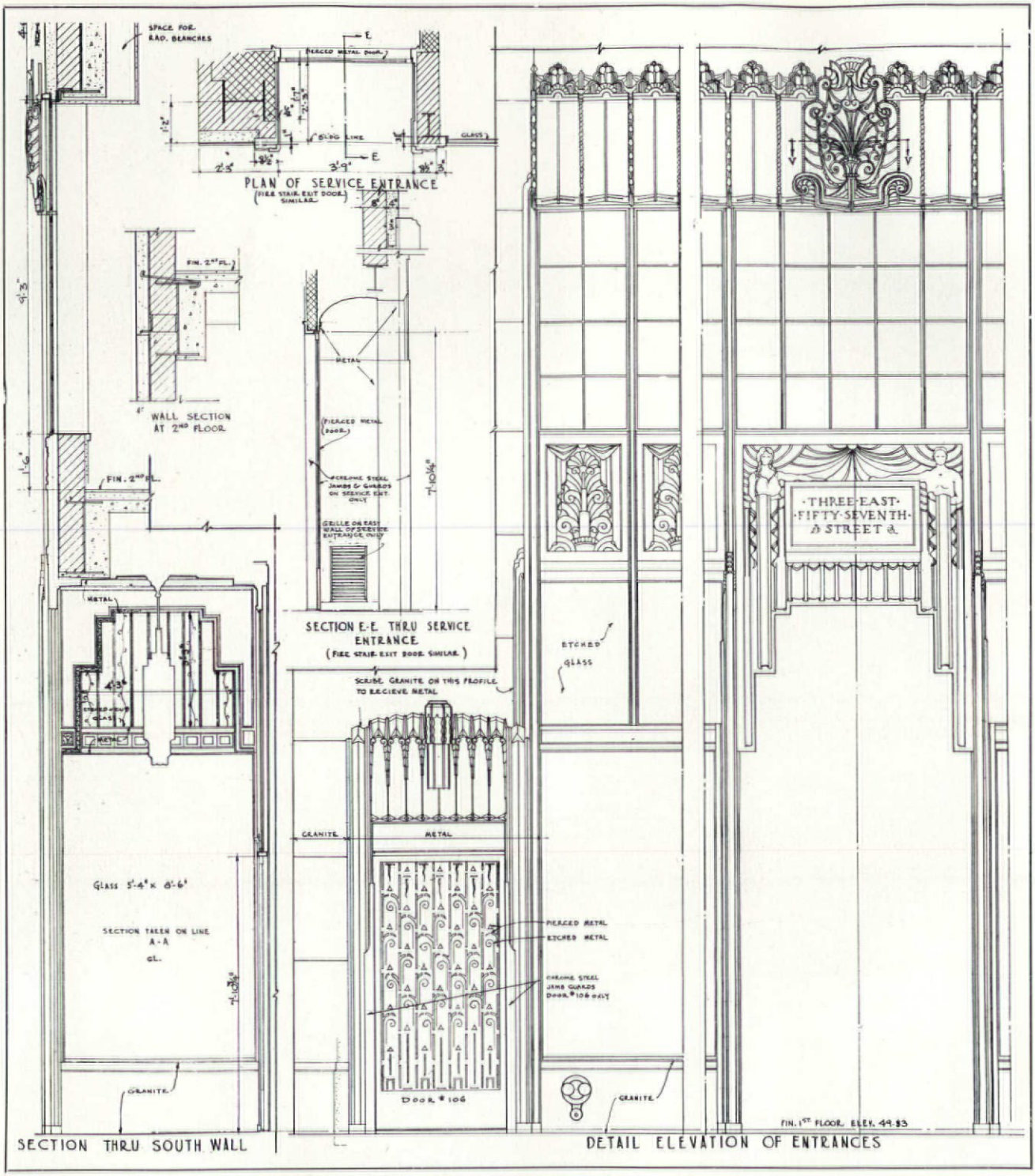
The building was constructed by Starrett Brothers and Eken.

Fischer

L. P. HOLLANDER COMPANY BUILDING
3 EAST 57TH STREET, NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS

Fischer

L. P. HOLLANDER COMPANY BUILDING
3 EAST 57TH STREET, NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS



ENTRANCE DETAILS
L. P. HOLLANDER COMPANY BUILDING
3 EAST 57TH STREET, NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS

PORTFOLIO OF LANDSCAPE ARCHITECTURE

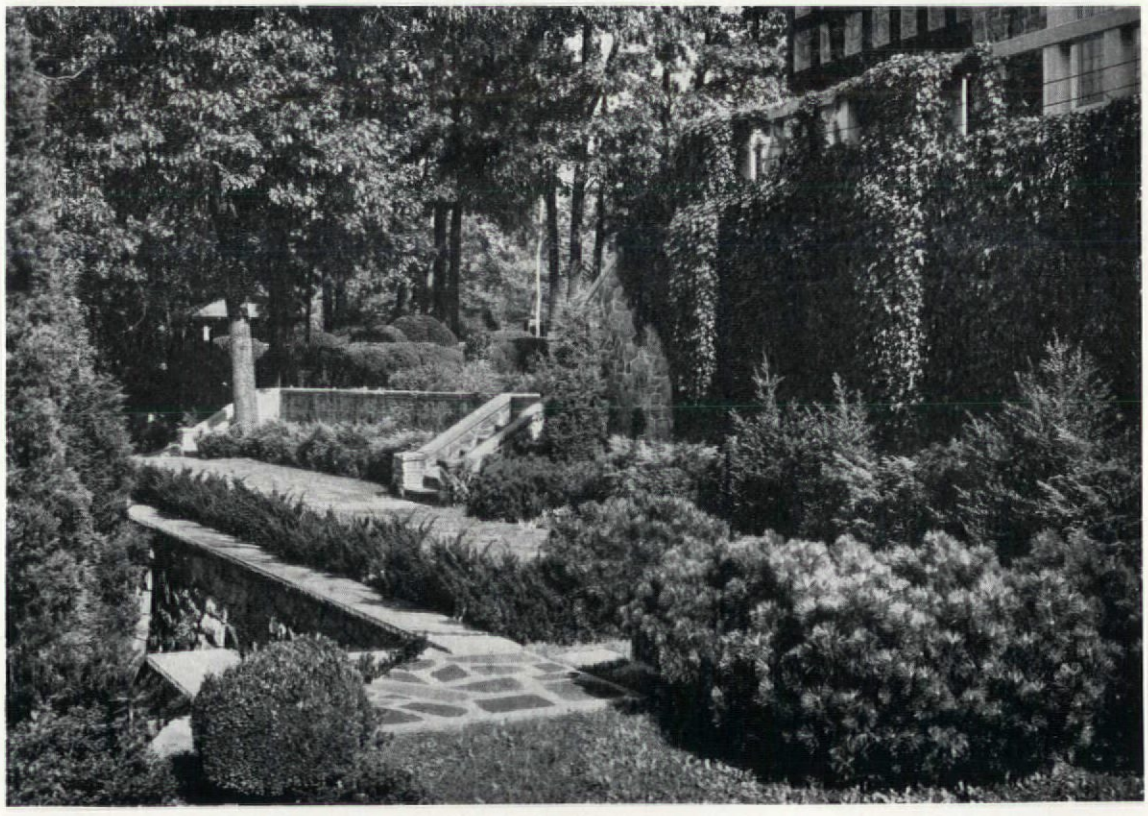
Gottscho

ESTATE OF J. E. ALDRED, GLEN COVE, LONG ISLAND
OLMSTED BROTHERS, LANDSCAPE ARCHITECTS
B. G. GOODHUE, ARCHITECT

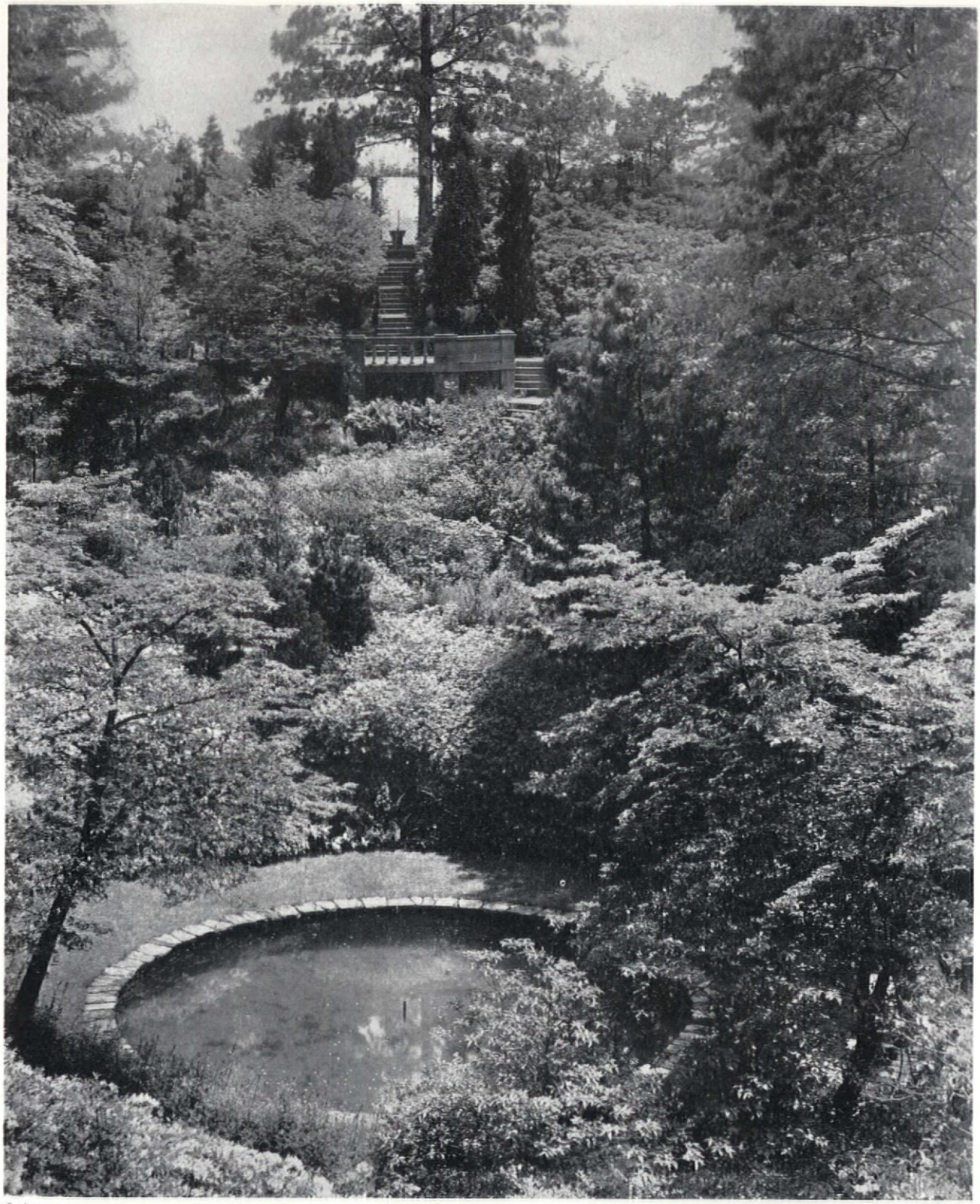
THE WORK OF OLMSTED BROTHERS AND SELECTIONS FROM THE 1931 EXHIBITION THE NEW YORK CHAPTER AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS

Gotsch

ESTATE OF J. E. ALDRED, GLEN COVE, LONG ISLAND
OLMSTED BROTHERS, LANDSCAPE ARCHITECTS

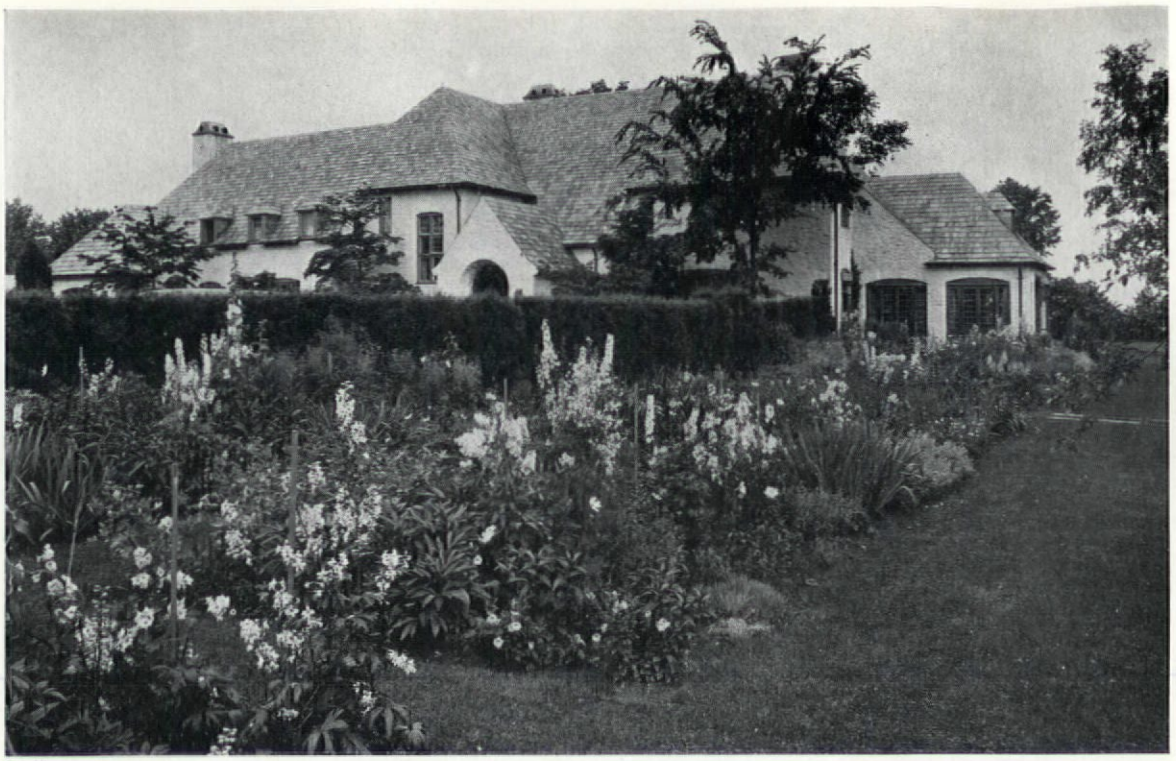


TERRACE OF PENNSYLVANIA ESTATE
JACOB JOHN SPOON, LANDSCAPE ARCHITECT



C. Ammya

VALLEY POOL AND STAIRS TO ROSE GARDEN ON UPPER LEVEL
ESTATE OF WALTER JENNINGS, COLD SPRING HARBOR, LONG ISLAND
OLMSTED BROTHERS, LANDSCAPE ARCHITECTS

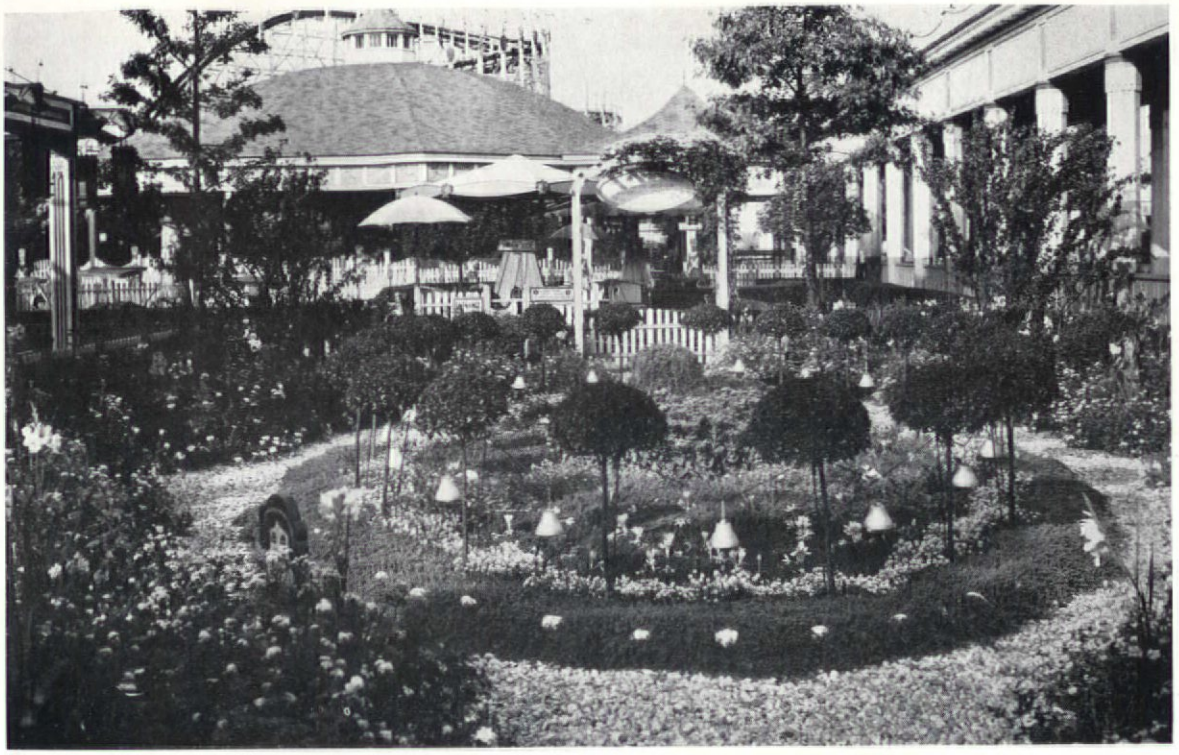


Gottscho

VIEW OF HOUSE FROM FLOWER GARDEN
ESTATE OF S. T. CALLAWAY, RYE, NEW YORK
ROBERT LUDLOW FOWLER, JR., LANDSCAPE ARCHITECT

Gottscho

FLOWER BORDER, ESTATE OF S. T. CALLAWAY, RYE, NEW YORK
ROBERT LUDLOW FOWLER, JR., LANDSCAPE ARCHITECT
HEATHCOTE WOOLSEY, ARCHITECT



Gatt

"MARY'S GARDEN" IN PLAYLAND
WESTCHESTER COUNTY PARK SYSTEM, NEW YORK
GILMORE D. CLARKE, LANDSCAPE ARCHITECT

C. Amenya

VISTA TOWARD HOUSE TERRACE
GARDEN OF FRANK E. BARBOUR, CANAJOHARIE, NEW YORK
HELEN SWIFT JONES, LANDSCAPE ARCHITECT

Gottscho

ESTATE OF THEODORE KIENDL, BRONXVILLE, NEW YORK
ROBERT LUDLOW FOWLER, JR., LANDSCAPE ARCHITECT

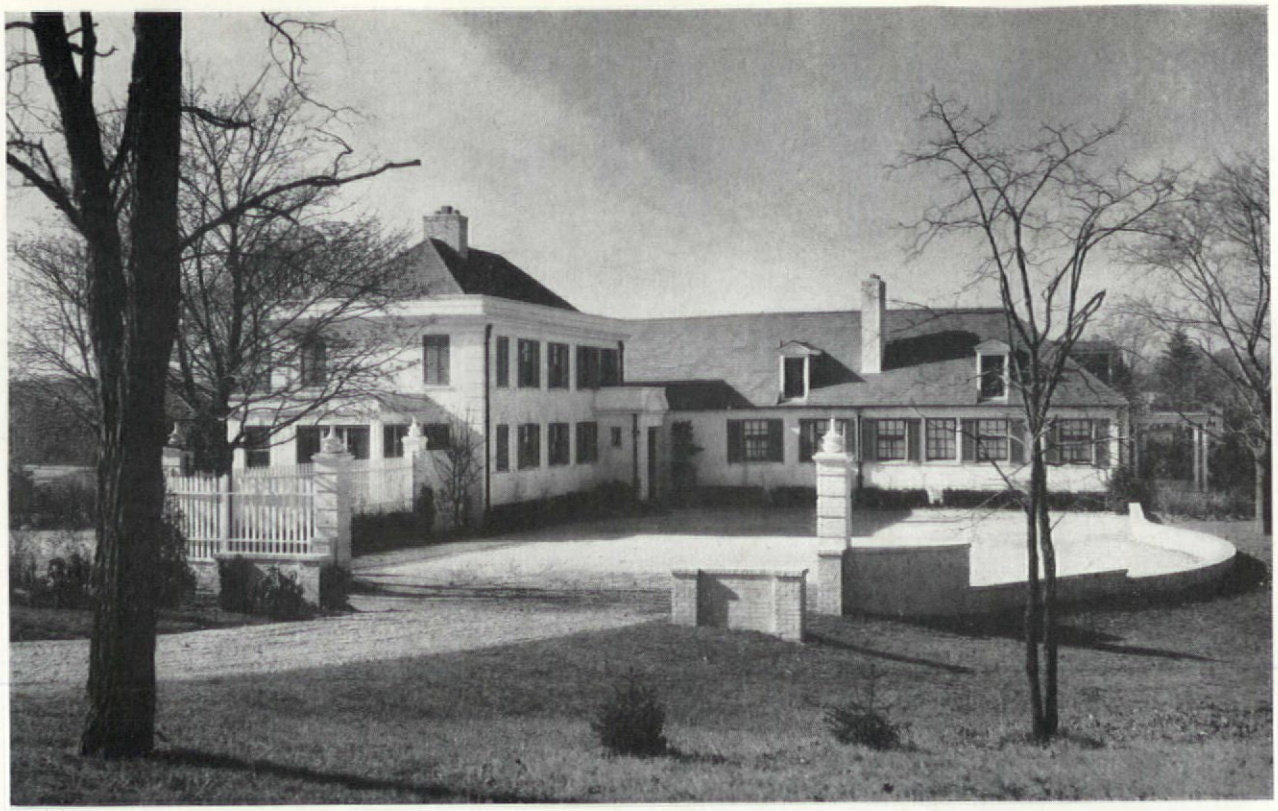
Van Anda

A REMODELED HOUSE ON LONG ISLAND

RODGERS AND POOR, ARCHITECTS

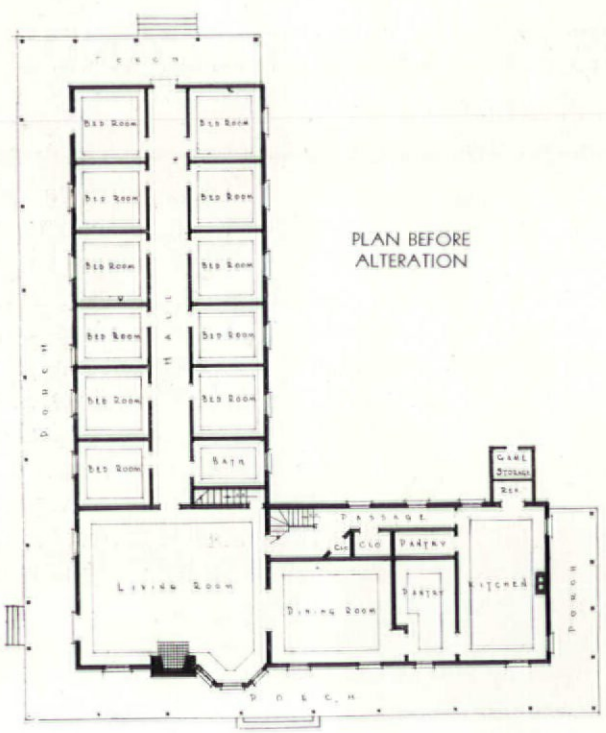
This whitewashed brick Regency house for Morgan W. Jopling at Smithtown, Long Island, began in 1890 as a fishing and hunting club. As each of the original twelve members died, his share was bought by the remaining members until the club finally ceased to exit. The clubhouse was unoccupied for nearly ten years until in 1928 Mr. Jopling, president MacArthur Concrete Pile Corporation, saw its potentialities and bought it for alteration into a residence.

The old clubhouse was a low rambling shingle structure surrounded by a porch with trimmed tree trunks for columns. When stripped of incrustations, the long low wing suggested the architecture of the French countryside. A wall surface of brick was desired. This requirement was met by veneering the brick on the existing wall. The brick was laid on edge, not flat, in order to save money, and whitewashed. The living room became a room 30′ x 40′; the floor was dropped four steps below the rest of the first floor. The roof lines of the main block and the wing were untouched but both roofs were slated and a wood parapet added to the main house. The front door motif was added; also the storeroom. Tall French doors were placed in the living room and the dining room opening out on the terrace. New dormers were placed on the wing and the interior partitions were changed.



Van Anda

HOUSE OF MORGAN W. JOPLING, SMITHTOWN, LONG ISLAND
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS



PLAN BEFORE ALTERATION

PLAN AFTER ALTERATION

Van Anda

HOUSE OF MORGAN W. JOPLING, SMITHTOWN, LONG ISLAND
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS

Van Anda

HOUSE OF MORGAN W. JOPLING, SMITHTOWN, LONG ISLAND
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS

Van Anda

HOUSE OF MORGAN W. JOPLING, SMITHTOWN, LONG ISLAND
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS

Van Anda

HOUSE OF MORGAN W. JOPLING, SMITHTOWN, LONG ISLAND
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS

Nyholm and Lincoln

A BRANCH BANK IN NEW YORK CITY

EUGENE SCHOEN, ARCHITECT

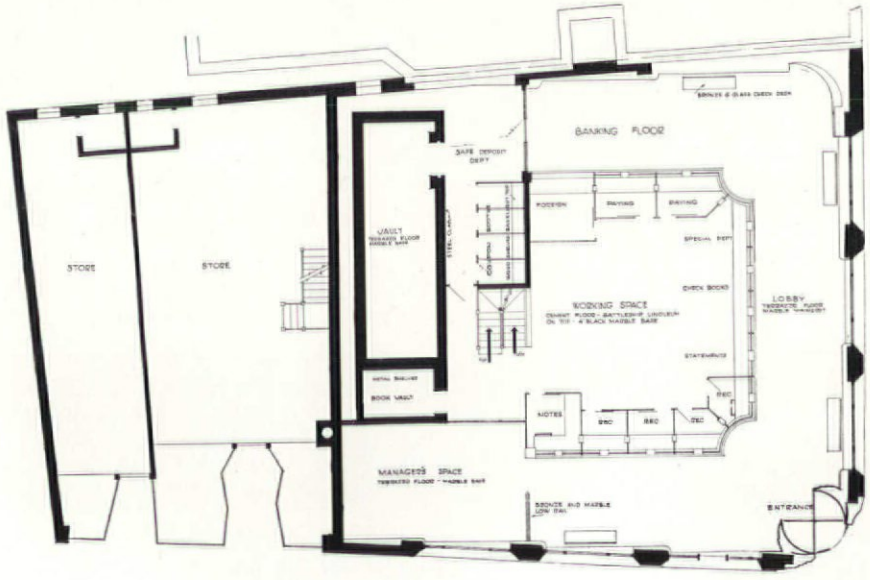
The Bronx branch office of the Public National Bank and Trust Company of New York, recently completed, occupies a plot 62 by 62 feet, and rises to a height of 30 feet. The windows reach nearly to the 25-foot ceiling and afford ample light. The facade is Indiana limestone with a polished granite base. The bronze entrance is in bas-relief.

The architect's treatment of the interior affords many conveniences contributing to banking efficiency. The tellers' cages and working space occupy the center portion of the banking room and are surrounded on three sides by a lobby 12 feet wide. Quarters for the officials are located in the back of the banking room with access from the Claremont Parkway side. The safe deposit vaults occupy the remaining space on the north side. Above the vaults is a mezzanine floor furnishing additional working space. Silver storage vaults are located in the cellar.

The walls of the banking room are plaster with a wainscot of Botticino marble 4 feet 6 inches high. The screen surrounding the tellers' space is of the same marble with a horizontal band of Belgian black marble at the counter level. The cornice of the screen consists of flat bakelite with two horizontal bronze moldings. The space between the cornice and the ledge is made up of bronze pilaster, grilles and glass. In the center of the ceiling is a skylight which has a ground glass ceiling light measuring 14 by 35 feet. Terrazzo with a border of Belgian black marble is used for the floors.

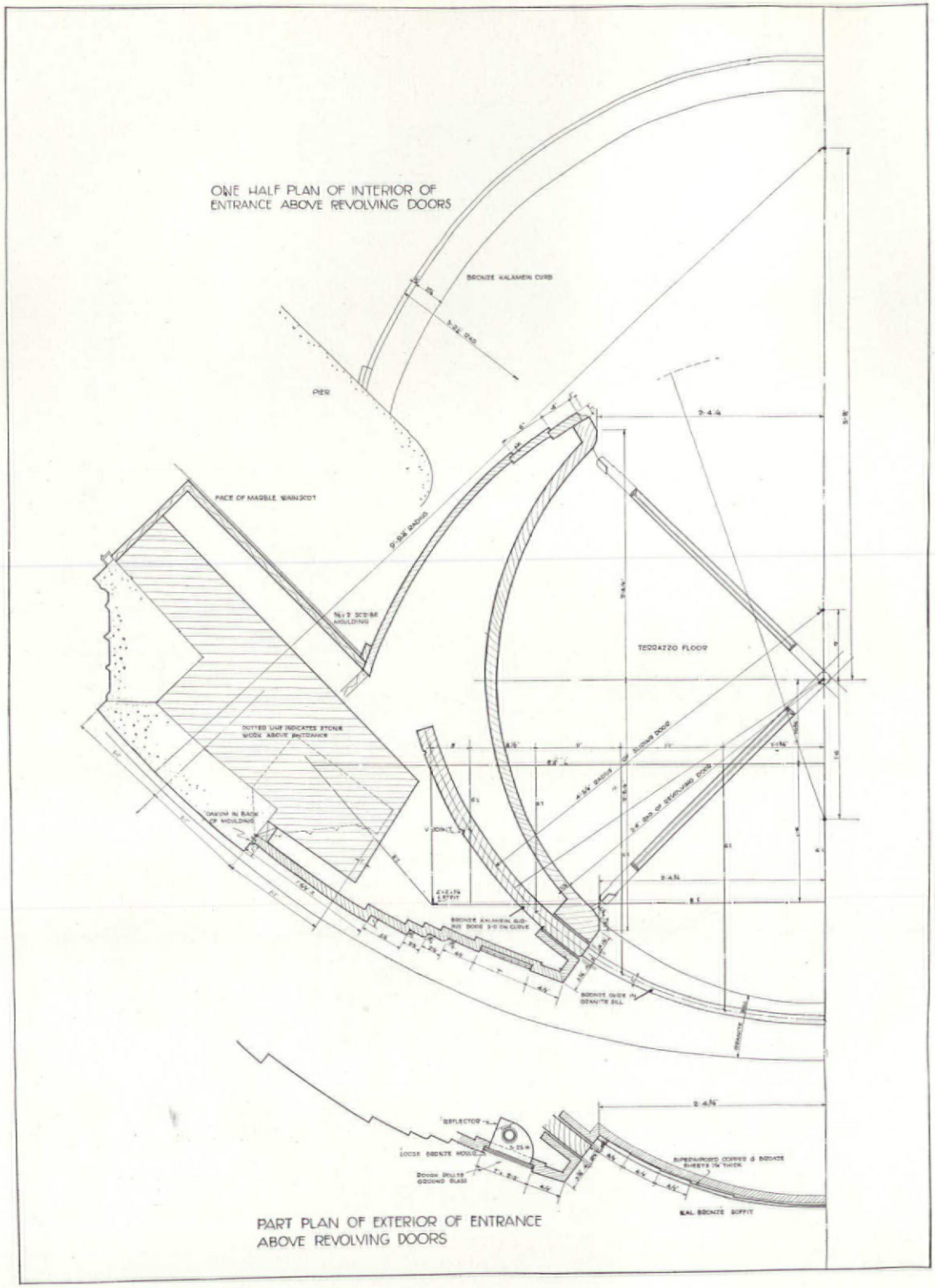
Nyholm and Lincoln

THE PUBLIC NATIONAL BANK AND TRUST COMPANY
BRONX BRANCH, NEW YORK
EUGENE SCHOEN, ARCHITECT



Nyholm and Lincoln

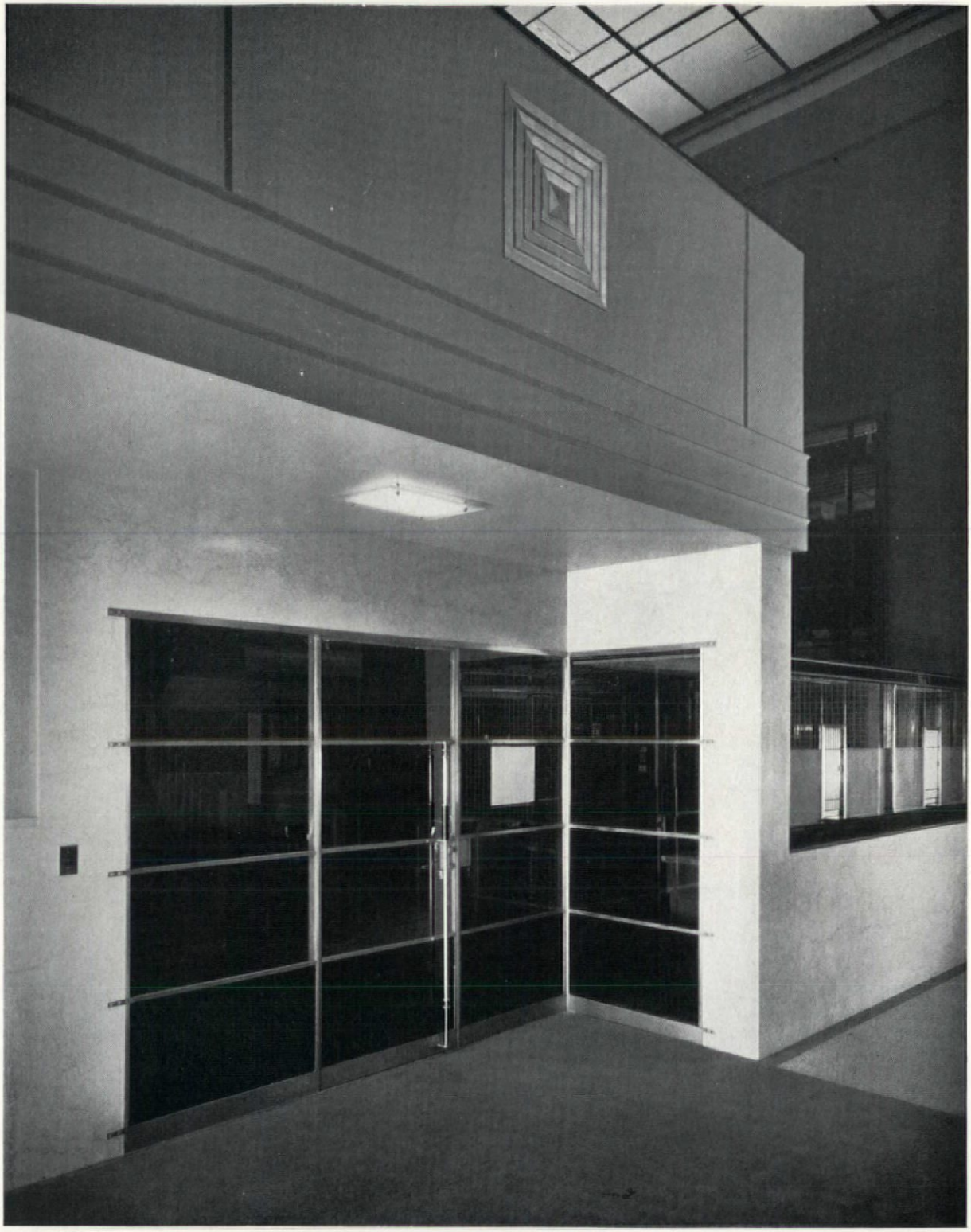
THE PUBLIC NATIONAL BANK AND TRUST COMPANY
BRONX BRANCH, NEW YORK
EUGENE SCHOEN, ARCHITECT



THE PUBLIC NATIONAL BANK AND TRUST COMPANY
BRONX BRANCH, NEW YORK
EUGENE SCHOEN, ARCHITECT

Nyholm and Lincoln

THE REPUBLIC NATIONAL BANK AND TRUST COMPANY
BRONX BRANCH, NEW YORK
EUGENE SCHOEN, ARCHITECT



Nyholm and Lincoln

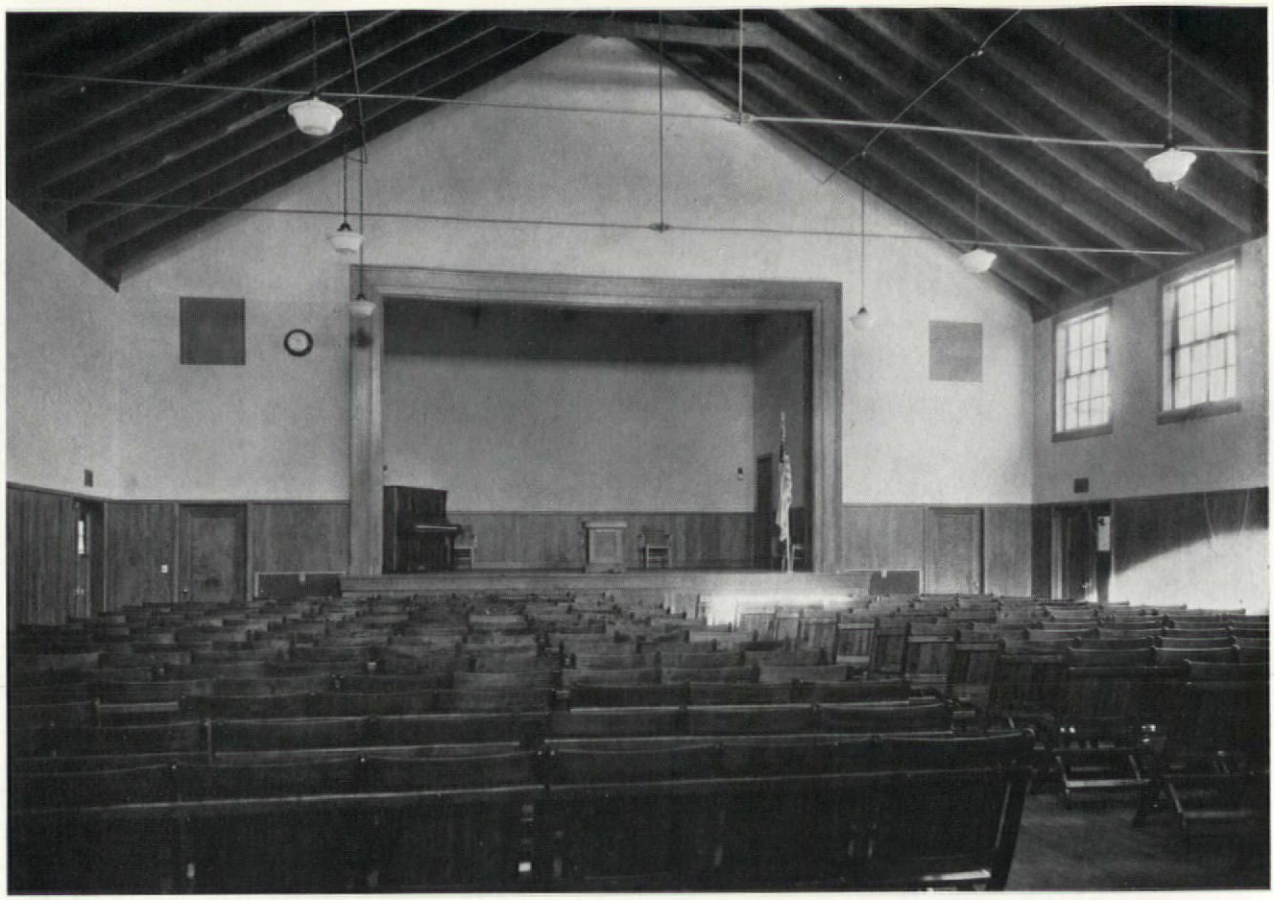
THE PUBLIC NATIONAL BANK AND TRUST COMPANY
BRONX BRANCH, NEW YORK
EUGENE SCHOEN, ARCHITECT

PORTFOLIO OF CURRENT ARCHITECTURE

Weber

WEST FRONT OF ELEMENTARY SCHOOL, NORWOOD, MASSACHUSETTS
McLAUGHLIN AND BURR, ARCHITECTS

ELEMENTARY SCHOOLS
HIGH SCHOOLS
AND
A COUNTRY DAY SCHOOL



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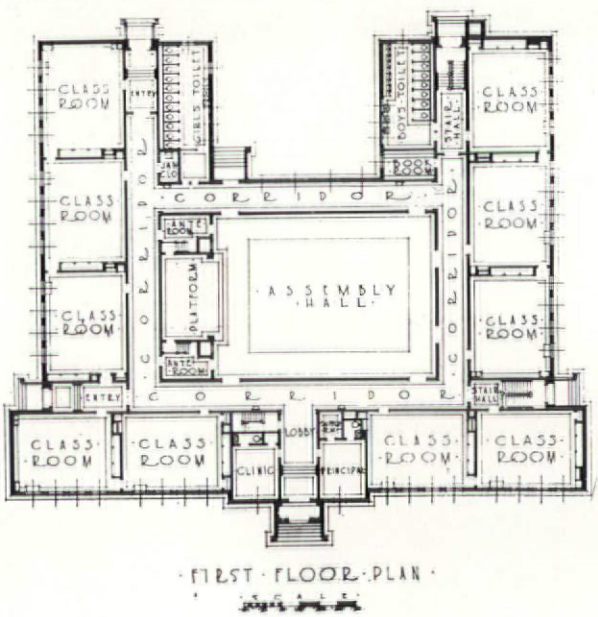
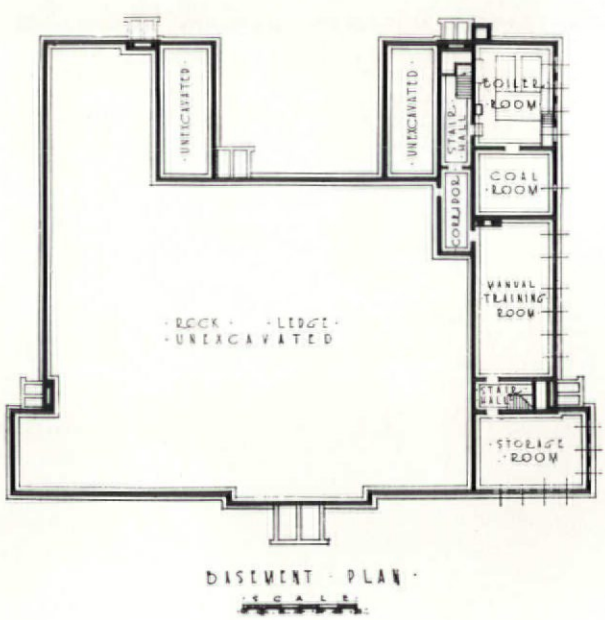
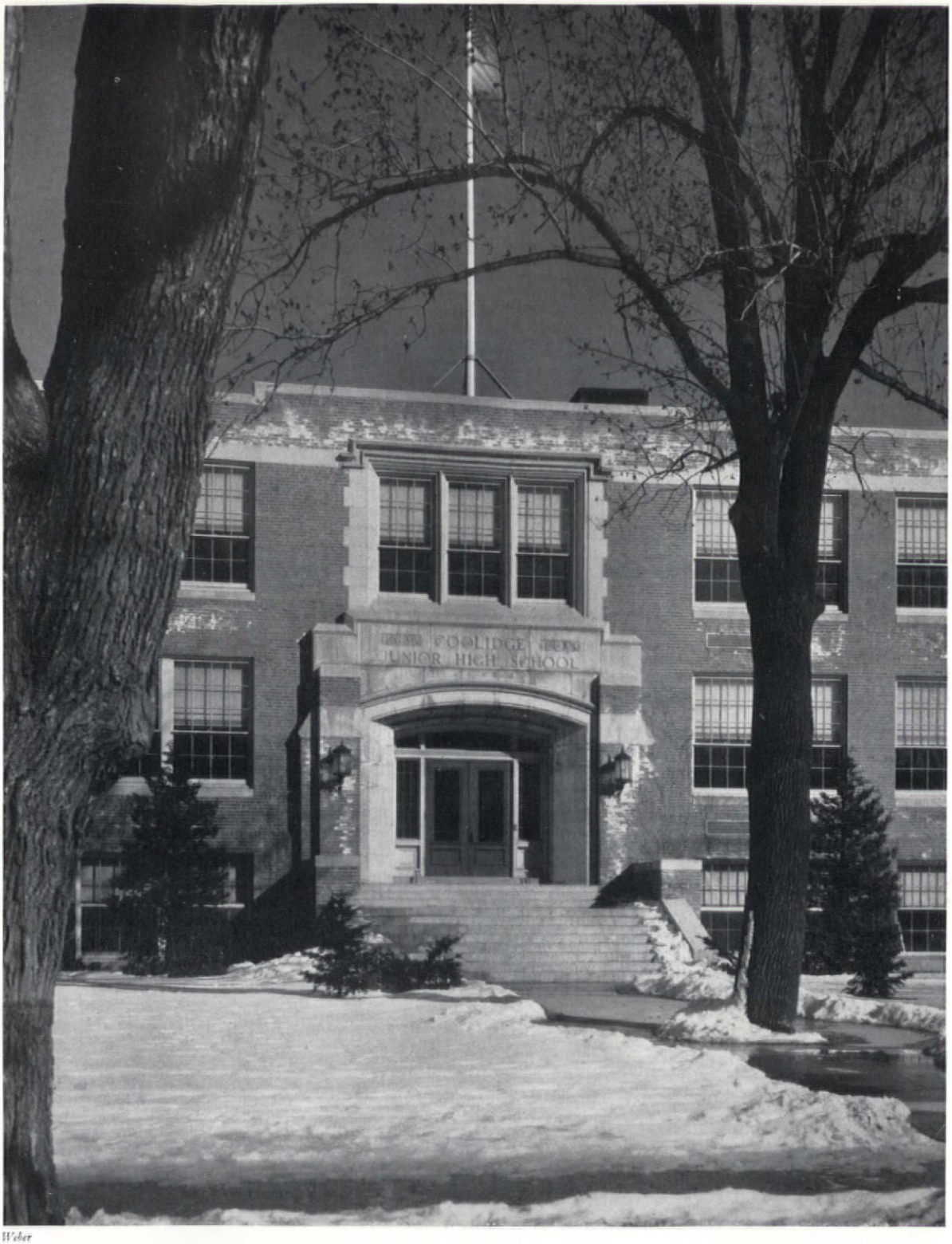
ASSEMBLY HALL OF ELEMENTARY SCHOOL, NORWOOD, MASSACHUSETTS
McLAUGHLIN AND BURR, ARCHITECTS



FIRST FLOOR PLAN
SCALE

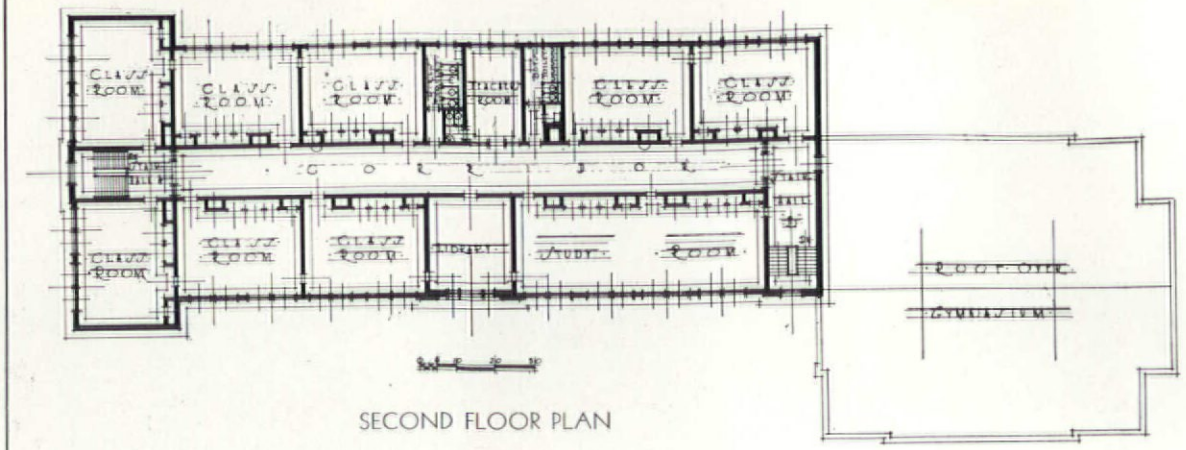


BASEMENT PLAN
SCALE

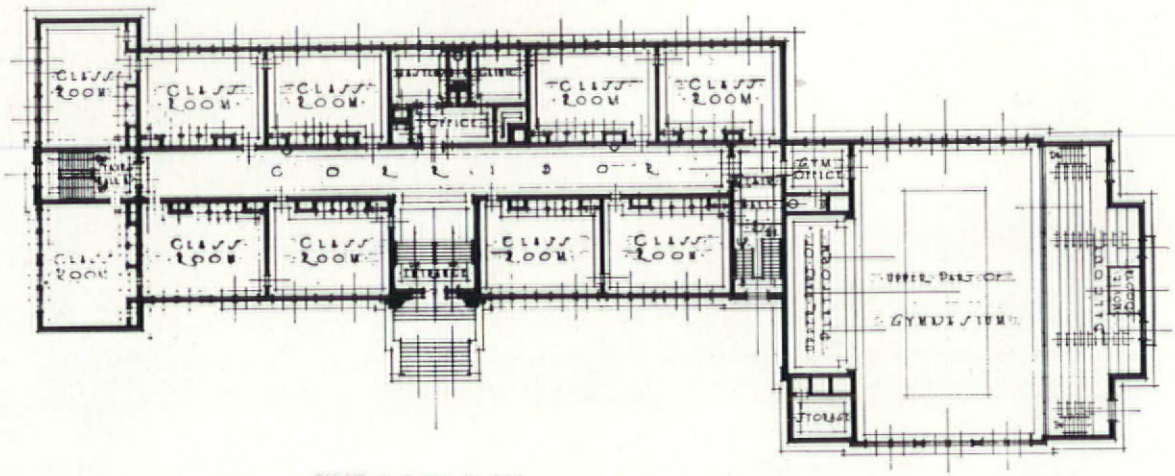


Weber

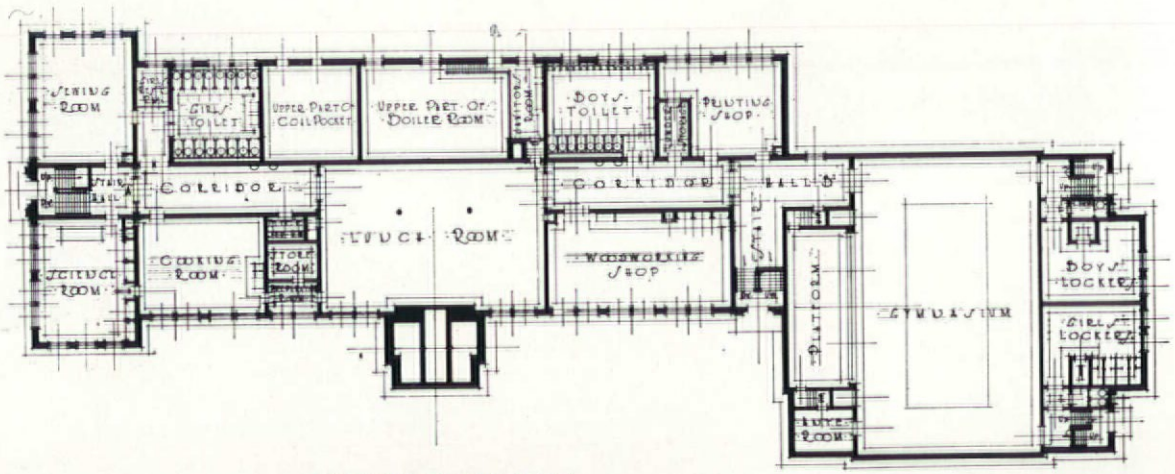
COOLIDGE JUNIOR HIGH SCHOOL, NATICK, MASSACHUSETTS
McLAUGHLIN AND BURR, ARCHITECTS



SECOND FLOOR PLAN



FIRST FLOOR PLAN



GROUND FLOOR PLAN

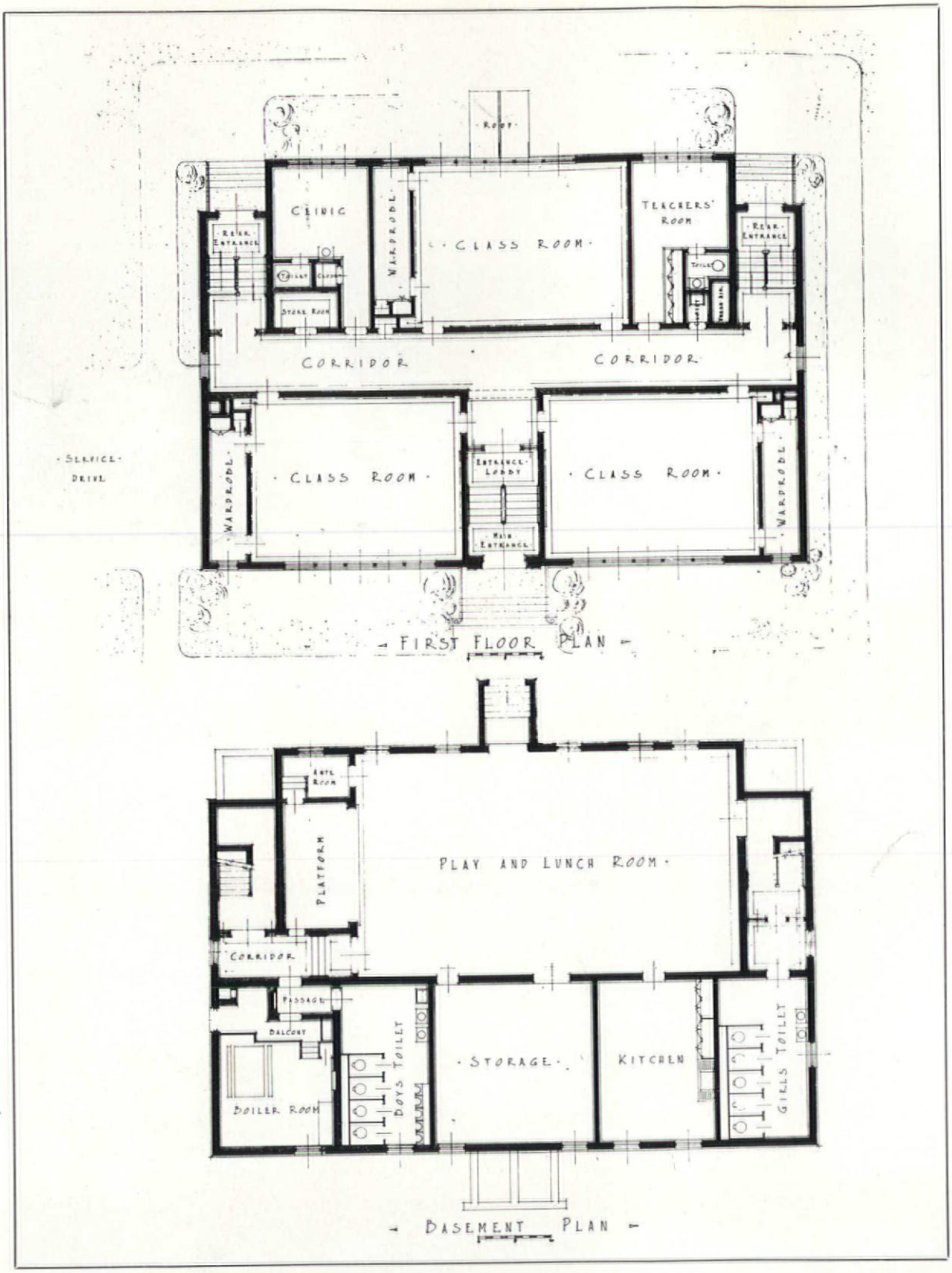
COOLIDGE JUNIOR HIGH SCHOOL, NATICK, MASSACHUSETTS
McLAUGHLIN AND BURR, ARCHITECTS

Weber

COOLIDGE JUNIOR HIGH SCHOOL, NATICK, MASSACHUSETTS
McLAUGHLIN AND BURR, ARCHITECTS

Weber

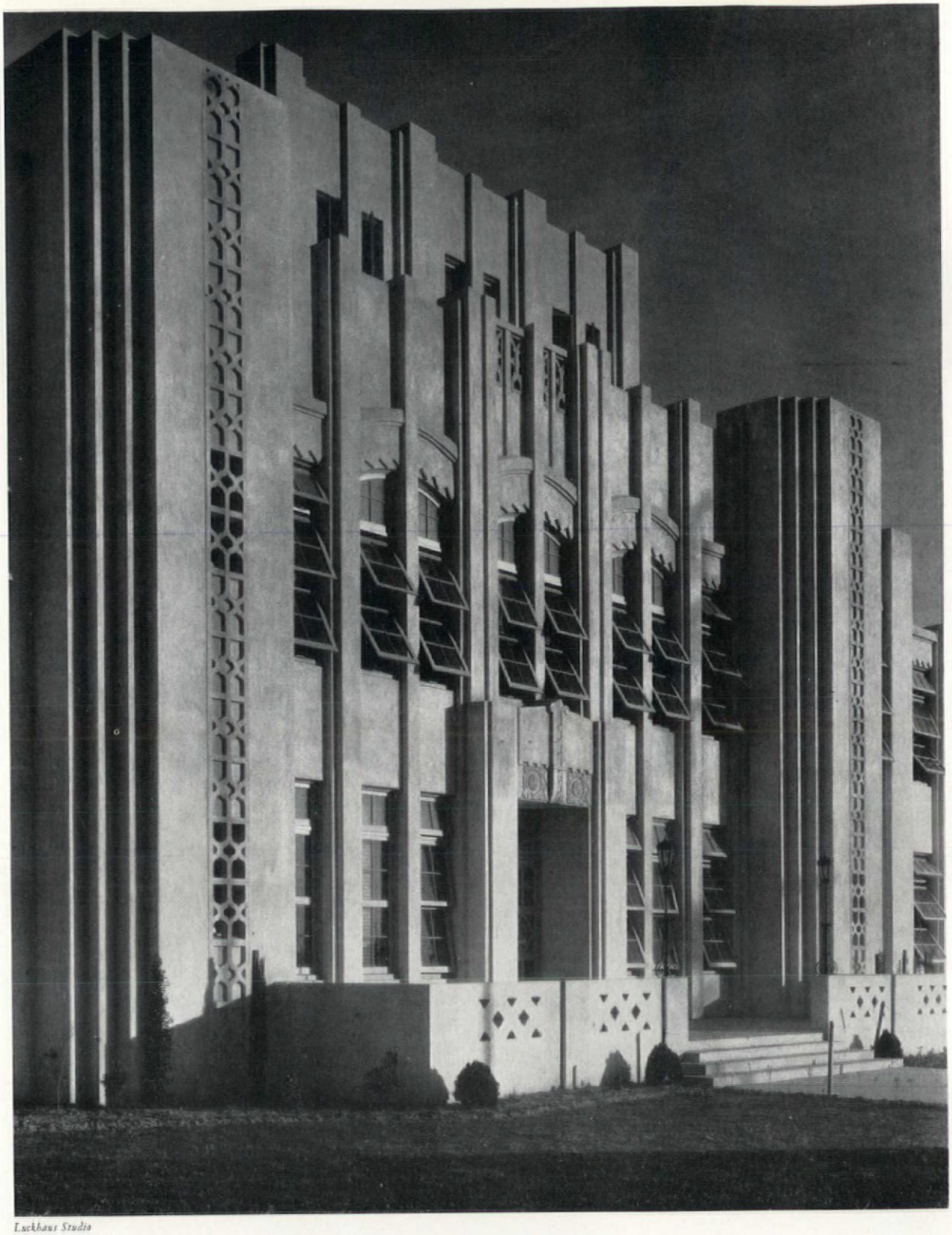
ELEMENTARY SCHOOL, SOUTH WALPOLE, MASSACHUSETTS
McLAUGHLIN AND BURR, ARCHITECTS



ELEMENTARY SCHOOL, SOUTH WALPOLE, MASSACHUSETTS
McLAUGHLIN AND BURR, ARCHITECTS

Weber

ELEMENTARY SCHOOL, SOUTH WALPOLE, MASSACHUSETTS
McLAUGHLIN AND BURR, ARCHITECTS

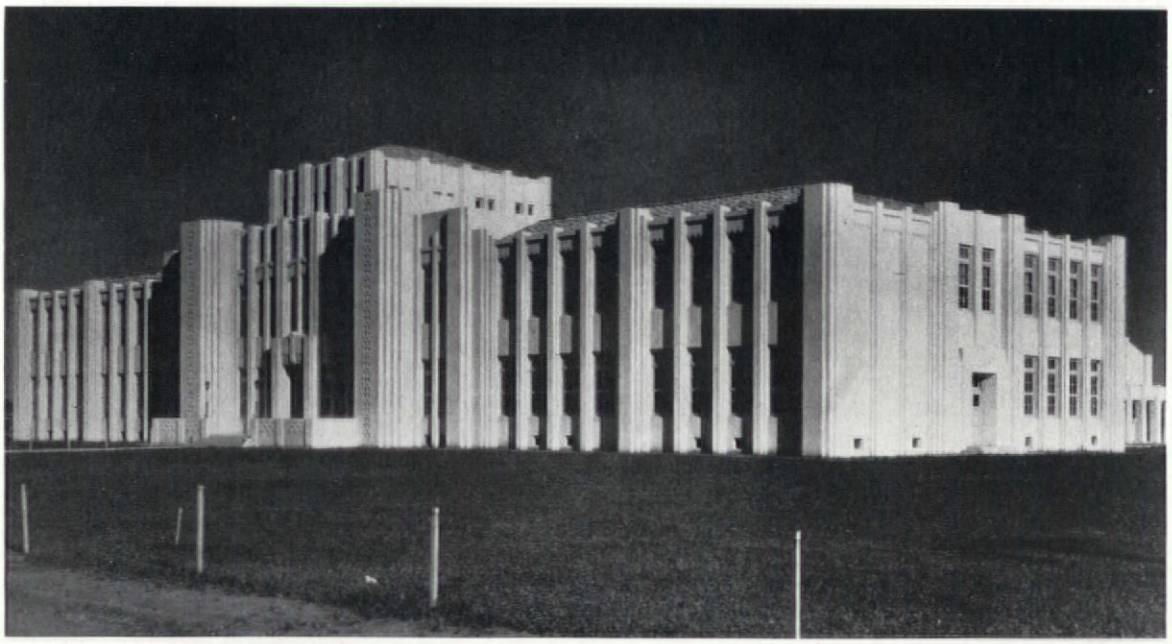


Luckhaus Studio

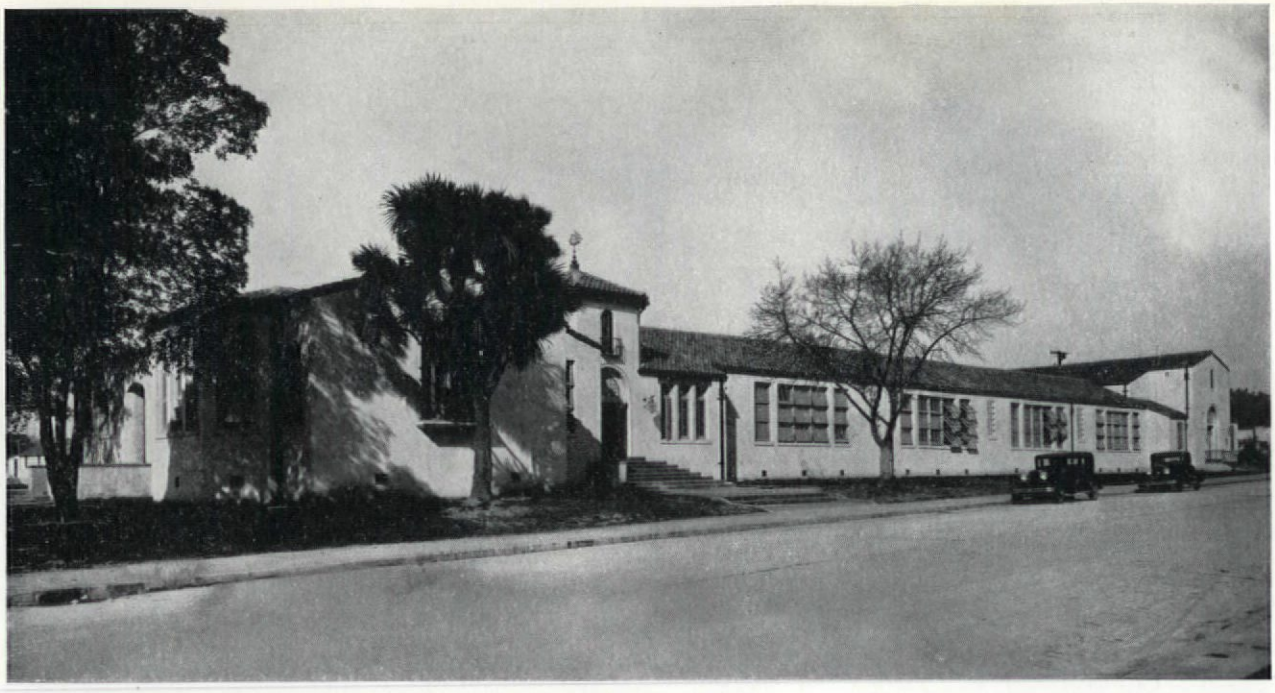
FRONT ENTRANCE DETAIL
JUNIOR HIGH SCHOOL, LYNWOOD, CALIFORNIA
MARSH, SMITH AND POWELL, ARCHITECTS

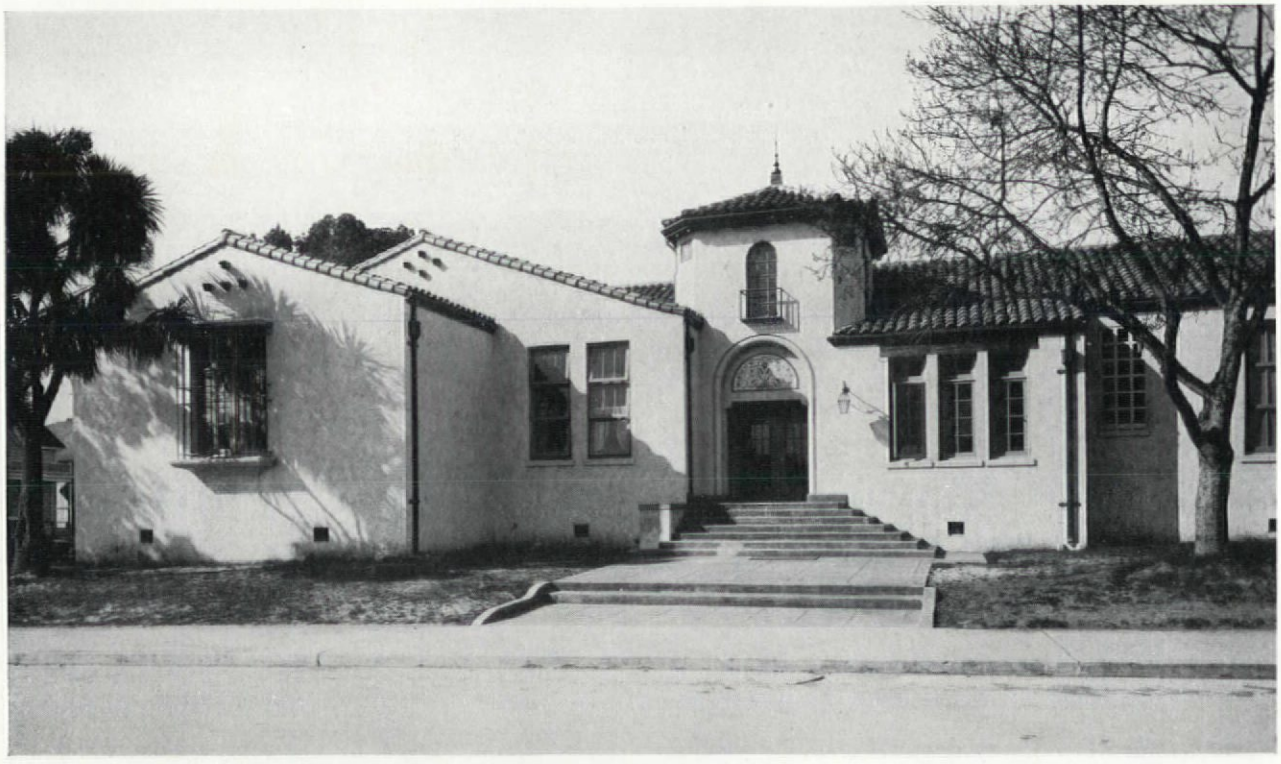
Luckhaus Studio

ELEMENTARY SCHOOL, SIERRA MADRE, CALIFORNIA
MARSH, SMITH AND POWELL, ARCHITECTS

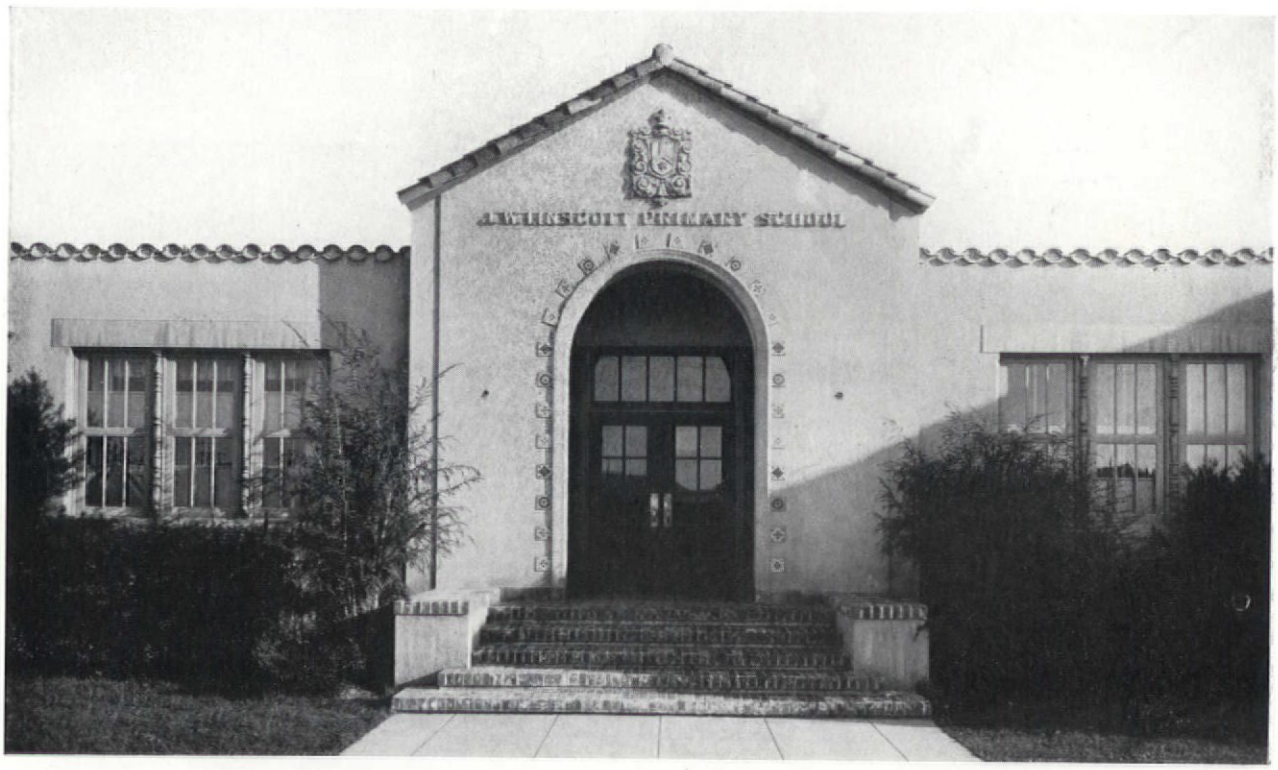


JUNIOR HIGH SCHOOL, LYNWOOD, CALIFORNIA
MARSH, SMITH AND POWELL, ARCHITECTS

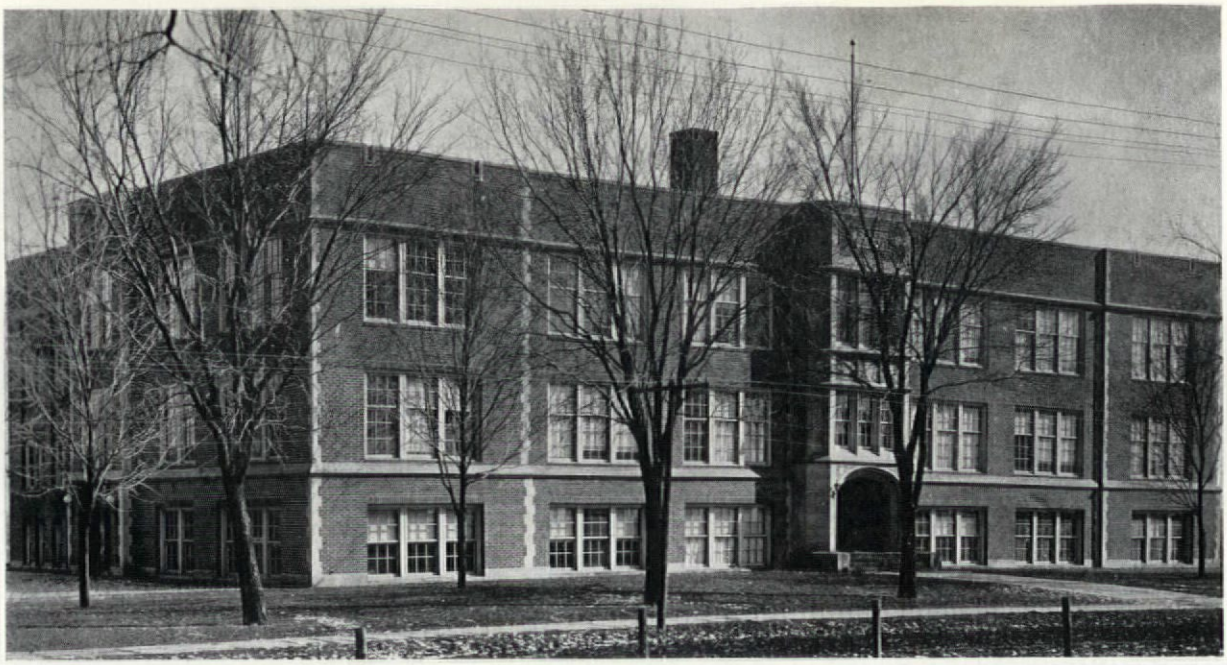




LAUREL STREET PRIMARY SCHOOL, SANTA CRUZ, CALIFORNIA
WILLIAM H. WEEKS, ARCHITECT

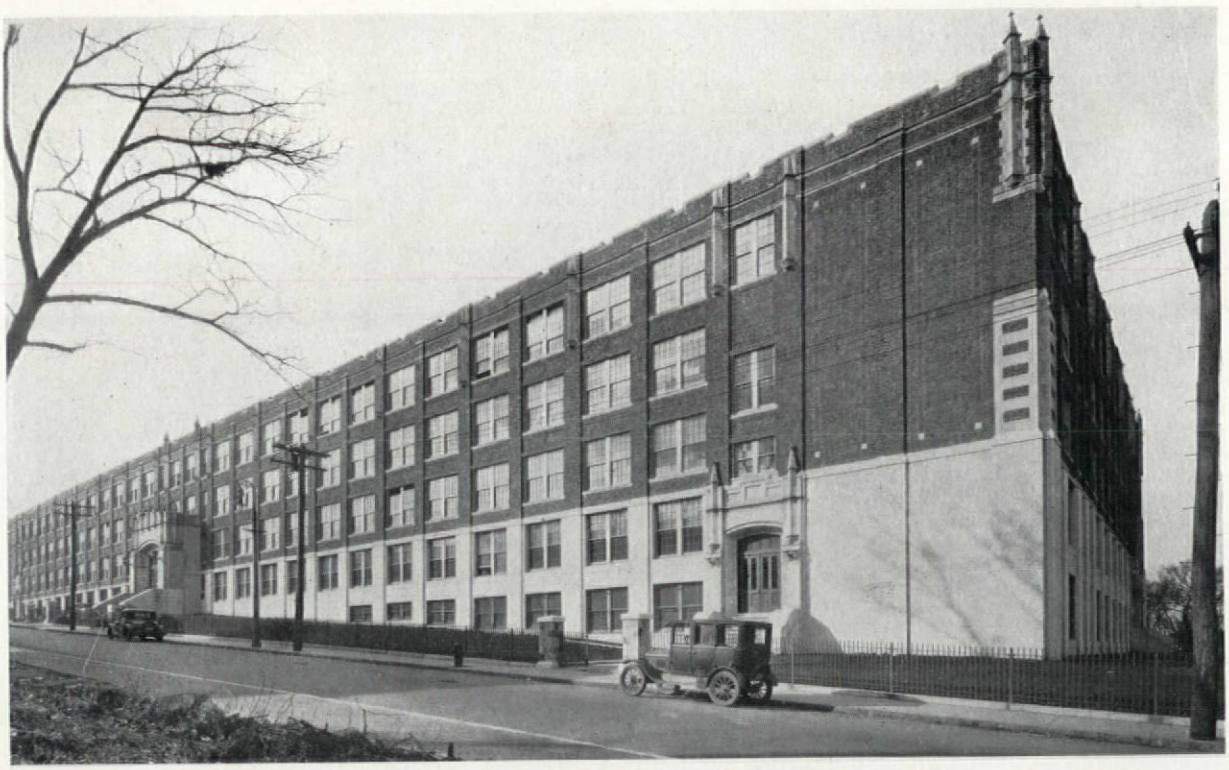


LINSCOTT PRIMARY SCHOOL, WATSONVILLE, CALIFORNIA
WILLIAM H. WEEKS, ARCHITECT



Cost: $125,000. Seven recitation rooms; laboratories, gymnasium and auditorium.

TOWNSHIP HIGH SCHOOL, TOULON, ILLINOIS
HEWITT, EMERSON AND GREGG, ARCHITECTS



Egan

The building houses a girls' senior high school, a boys' senior high school, a branch public library, a ward room and a precinct voting place.

MEMORIAL HIGH SCHOOL, ROXBURY, MASSACHUSETTS
HARRISON H. ATWOOD, ARCHITECT

Egan

The boys' gymnasium is used also as a drill hall. Running track can accommodate 120 spectators.

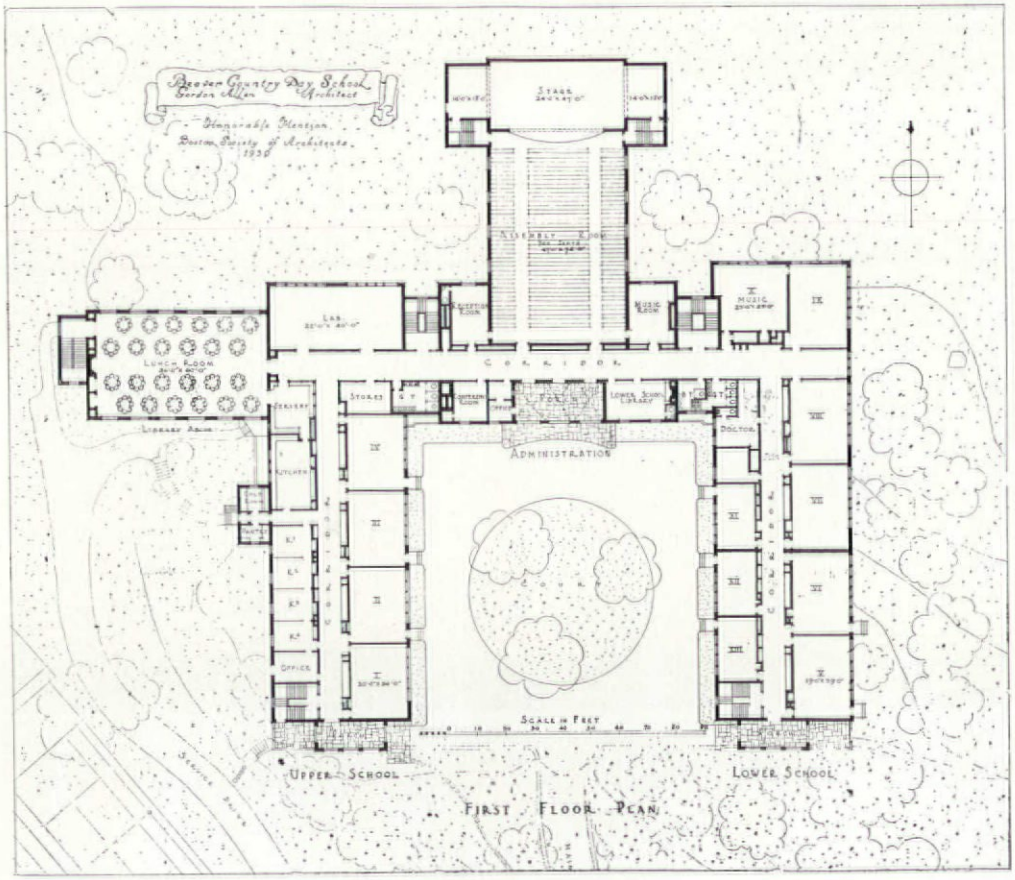
MEMORIAL HIGH SCHOOL, ROXBURY, MASSACHUSETTS
HARRISON H. ATWOOD, ARCHITECT

The swimming pool measures 25′ by 75′, and is used for instruction and for school athletic events. At shallow end is a seating platform with accommodations for 70 persons.

MEMORIAL HIGH SCHOOL, ROXBURY, MASSACHUSETTS
HARRISON H. ATWOOD, ARCHITECT

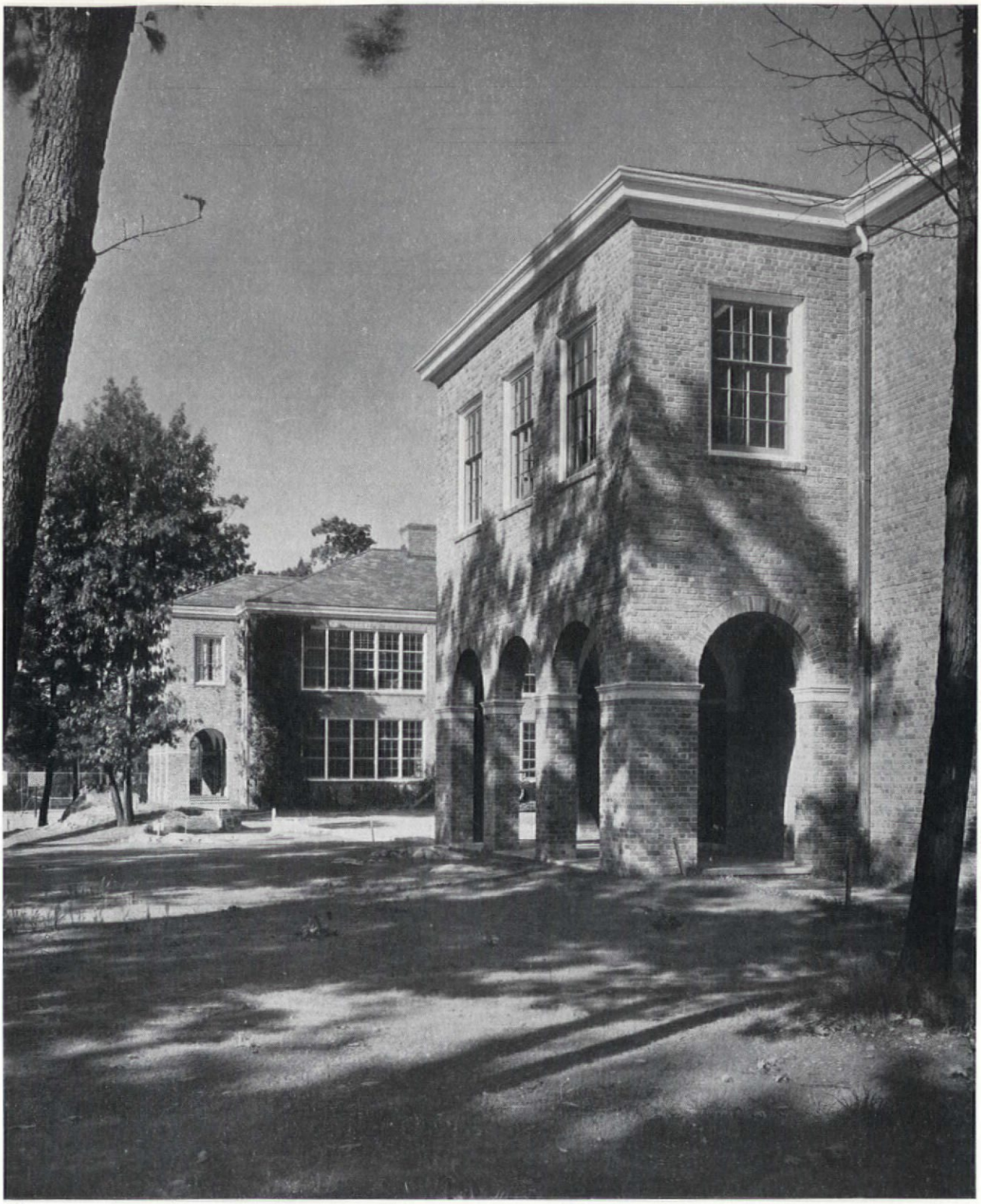
Weber

BEAVER COUNTRY DAY SCHOOL, BROOKLINE, MASSACHUSETTS
GORDON ALLEN, ARCHITECT



FIRST FLOOR PLAN

School units are constructed of local field stone and second-hand brick with slate roofs and wood trim. Frame, wood and steel. Steel windows. Cost averaged 47 cents a cubic foot.

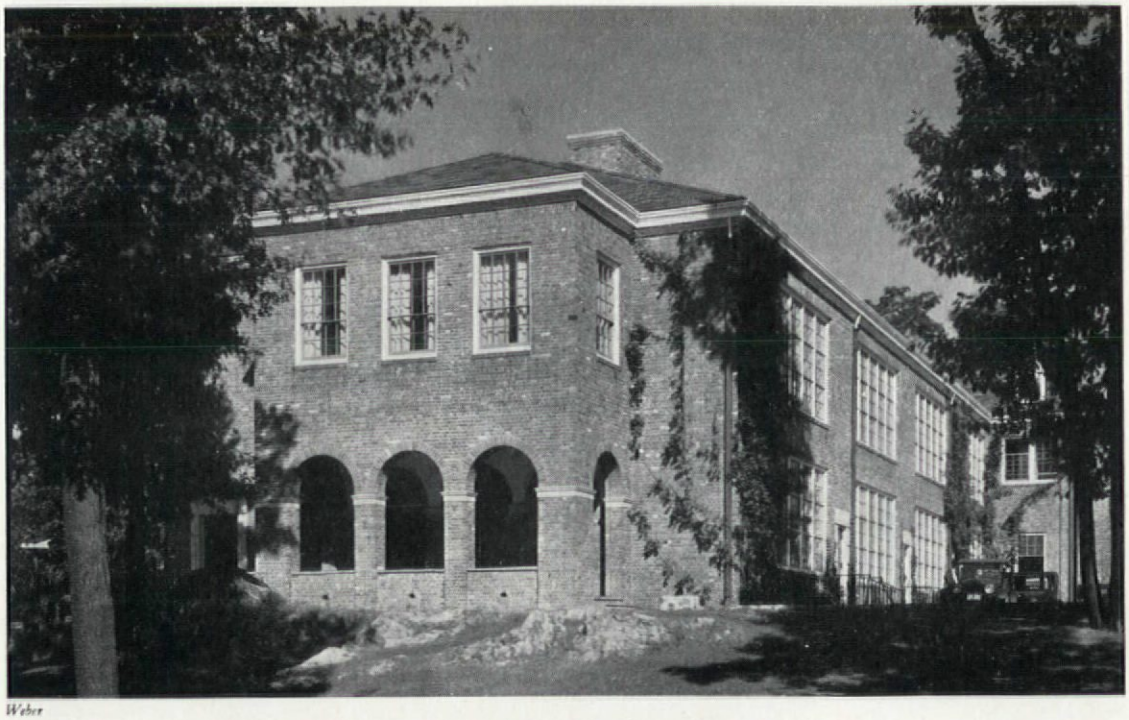


Weber

SOUTH PORCHES
BEAVER COUNTRY DAY SCHOOL, BROOKLINE, MASSACHUSETTS
GORDON ALLEN, ARCHITECT

Weber

ADMINISTRATION BUILDING



Weber

UPPER SCHOOL
BEAVER COUNTRY DAY SCHOOL, BROOKLINE, MASSACHUSETTS
GORDON ALLEN, ARCHITECT

Weber

SOUTH PORCHES
BEAVER COUNTRY DAY SCHOOL, BROOKLINE, MASSACHUSETTS
GORDON ALLEN, ARCHITECT

Weber

STUDIO

Weber

LOWER SCHOOL LIBRARY
BEAVER COUNTRY DAY SCHOOL, BROOKLINE, MASSACHUSETTS
GORDON ALLEN, ARCHITECT

Haskell

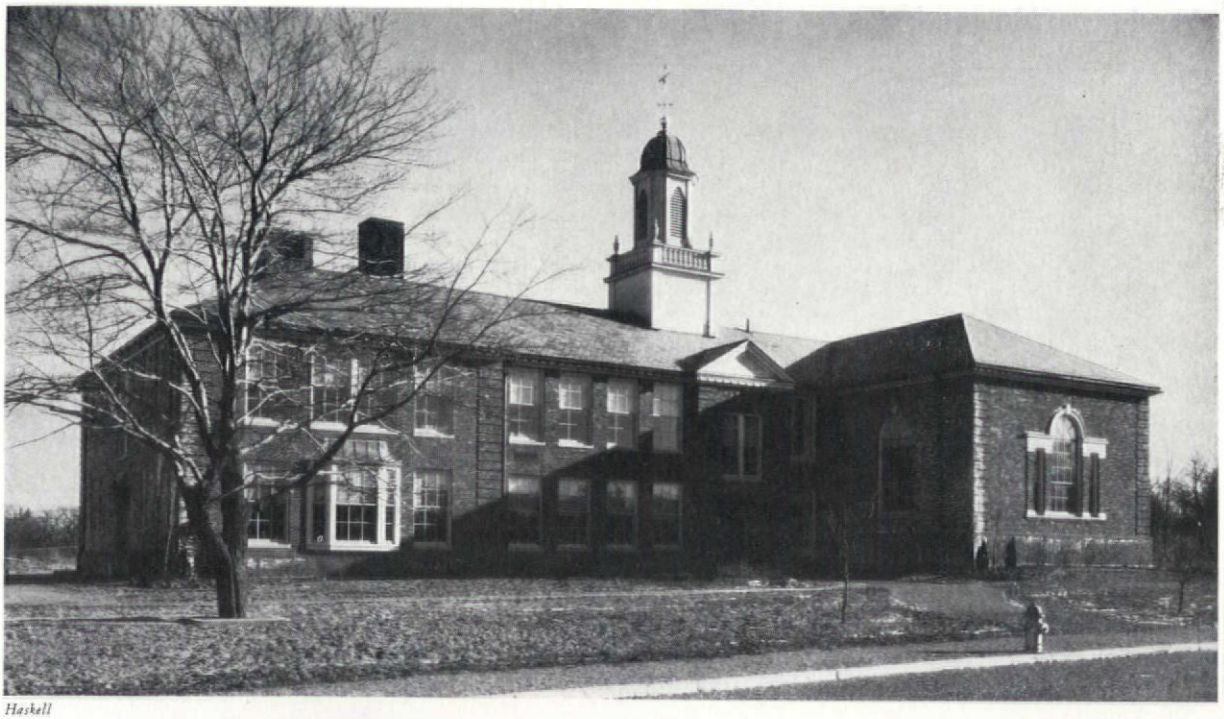
STANLEY SCHOOL, SWAMPSCOTT, MASSACHUSETTS
KILHAM, HOPKINS AND GREELEY, ARCHITECTS

Haskell

CHARLES J. EMERSON SCHOOL, STONEHAM, MASSACHUSETTS
KILHAM, HOPKINS AND GREELEY, ARCHITECTS

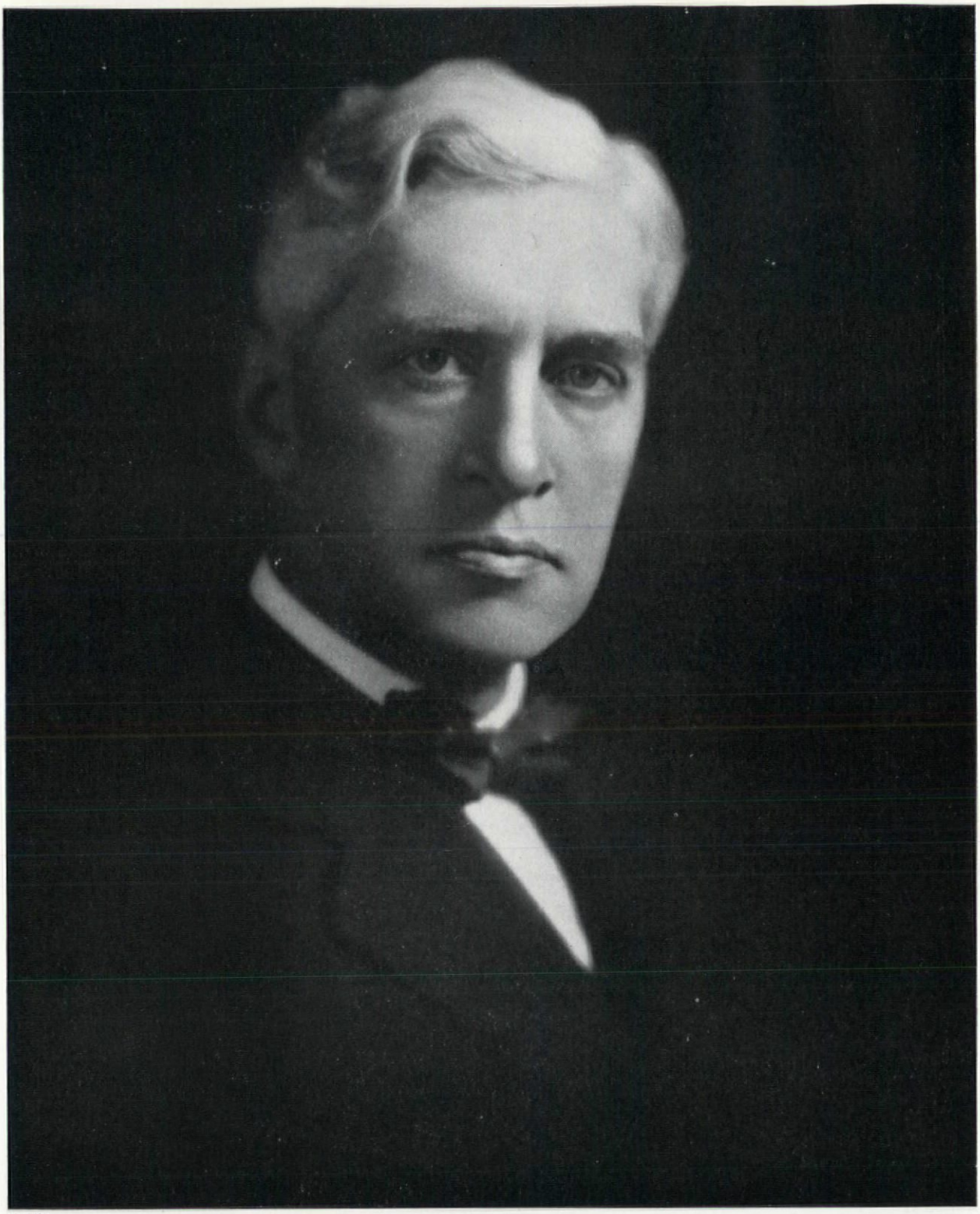
Haskell

CHARLES J. EMERSON SCHOOL, STONEHAM, MASSACHUSETTS
KILHAM, HOPKINS AND GREELEY, ARCHITECTS



Haskell

STANLEY SCHOOL, SWAMPSCOTT, MASSACHUSETTS
KILHAM, HOPKINS AND GREELEY, ARCHITECTS



Kashita

GEORGE WILSON MORGAN

George Wilson Morgan, for many years chairman of the board of directors of F. W. Dodge Corporation, died suddenly on March 28, 1931, at Hot Springs, Virginia. He was fifty-five years old.

Graduating in 1897 with the degree of Bachelor of Arts from Oberlin College, he entered the School of Law at Columbia University where he received the degree of Bachelor of Laws in 1900 and in the same year was admitted to the practice of law in New York State. He was Assistant District Attorney of New York County in 1902 and 1903, and by gubernatorial appointment, Superintendent of Elections of the State of New York from 1903 to 1906. He had for years been a trustee of Oberlin College which in 1922, in recognition of his brilliant career at the bar, conferred upon him the honorary degree of Doctor of Laws.

In more recent years his work at the bar was largely concerned with banking matters and he was one of the counsel to the commission to revise the New York State banking laws. He was a director of a number of corporate enterprises which had sought his business counsel.

Notwithstanding the heavy demands upon his time by his professional and business activities he found opportunity to follow the natural bent of his cultural tendencies and was an accomplished musician and a student of art, literature and economics, as well as a director of Beekman Street Hospital of New York.

His ability, his personal traits and the esteem in which he was held by his business associates can perhaps be no better recorded than by the following minute of the board of directors of F. W. Dodge Corporation:

The Board of Directors
of
F. W. Dodge Corporation

wishes to record its sense of great loss and deep
sorrow caused by the untimely death of

GEORGE W. MORGAN

its leader and wise counselor for so many years. The individual members feel that each one has lost a personal friend who commanded admiration, loyalty and affection. His modesty, charm, and humor, his patient, sympathetic and vital interest in every matter of policy or detail tending toward the upbuilding of the Corporation and in their own personal progress and welfare can never be forgotten. He had a broad mastery of the larger aspects of business. He was a man of many interests beyond the scope of this company's affairs, yet he informed himself on every phase of its business and also on the progress and welfare of members of the organization whether or not they had the opportunity of personal contact and acquaintance with him. His natural modesty led him to minimize the outward aspects of his leadership. Our entire personnel owe him a debt of gratitude far beyond their own realization, a debt we acknowledge and express on their behalf. His departure leaves the memory of a friend and leader whose inspiration will live with each one of us and whose wise counsel will continue to be the guiding influence in the conduct of this business through the years.

THE EDUCATION OF AN ARCHITECT

By JOSEPH HUDNUT, PROFESSOR OF ARCHITECTURE, COLUMBIA UNIVERSITY

No one will doubt that architects ought to be familiar with the technique of good construction; and by good construction I mean not merely the qualities and processes of traditional materials, such as brick and stone; I include steel, concrete, mechanical equipment, sanitation, in their most recent and progressive aspects. That the fundamentals of this technique may be taught by instruction and systematic exercise is a fact too obvious to need a sententious affirmation, although it is equally obvious that it is only through the actual practice of his profession that an architect can develop this technique to the point where it is commensurate with the demands of contemporary architecture.

It is nearly if not quite as evident that architects ought early in life to attain some understanding of the civilization whose ministers they are to be. Although it is only through a varied experience and a sustained contemplation that philosophers arrive at what they are pleased to call social principles or economic law, it may be taken for granted that the first approaches to such an understanding can be made in college.

Two responsibilities of a school of architecture then are plain. First, to teach through processes of instruction and discipline the science of construction, especially in its more abstract and general phases, so that the student may leave the school with that habitual imaginative experience with materials and constructed forms that is the necessary basis for a command of structural design. Second, to explain, so far as these can be explained, the important facts concerning those economic and intellectual currents in which the student lives; to make him so aware of these currents and of their origin, nature and direction, that the need to know them more profoundly will appear urgent and necessary.

Has the school no further responsibility toward its students?

Of course it has; and this third responsibility is more exacting than either of the two that I have described. This responsibility is the encouragement of those qualities of the mind—or the soul—of which the creation of beauty is the tangible expression.

An artist is a rare person, exceptionally endowed. But his endowments are useless without training. The art of the world was created not merely by gifted men but by men who, being gifted, submitted to a most arduous education—an education oftentimes self-imposed and self-directed, but an education nevertheless.

These facts seem evident enough; but I am aware of a very widespread skepticism regarding the need for the education of the senses—particularly in respect to the plastic arts. Perhaps the source of this skepticism is the dislike of men for discipline and endeavor. The education of the senses requires so concentrated and sustained an effort that we willingly believe that it is unnecessary. No able-bodied 100% American hesitates for a moment to form esthetic judgments concerning architecture, and the notion that architecture is created by a sudden frenzy of untaught genius satisfactorily explains his own inability to create beauty.

Until recently this somewhat juvenile concept has been held in check by the awe inspired by the hocus-pocus of Vignola. The Five Orders were invaluable for that conspiracy of bewilderment that is essential to every profession—especially to the profession of teaching—and even big business men were willing to abdicate their right to pass judgment in the presence of a professor who could clearly distinguish a Corinthian capital from a cauliflower. Eclecticism, with its insistence upon an

erudition apparently profound, provided the colleges with bastions even more formidable: a casual comparison of the pseudo-intermediate-ornate style with the quasi-rectilinear-perpendicular sufficed to end abruptly all discussion of architectural qualities.

But today, with Vignola driven from his throne, and with Eclecticism quite discredited by its own excesses, we have once more to deal directly with the romantic idea of untaught genius. Is it not an impertinence to offer assistance to genius?

The popularity of the doctrine, or doctrines, called *functionalism* has given a new significance to this question. Since Le Corbusier provided the necessary mystifications the dogma of functionalism has taken on an almost religious character: has it not already its mythology, its saints, its martyrdoms, its rituals, and its pantheon of gods—one of them from Chicago? And now that it is tinctured with romance (quaintly called "City-planning") it seems destined to carry everything before it.

Whatever functionalism may mean to its priests, the public understands it to mean that architectural beauty can be created by a process of logic. Beauty is the satisfaction that we experience when we perceive the fitness of an instrument for its use. Then let an architect merely plan and build intelligently; beauty will dwell unbidden in his organic structure.

Therefore our snooty schools of architecture have no need to concern themselves with beauty. Economics, business, sociology, physics, the cost of materials and the marketing of mortgages ought to be our preoccupation; where these are known, taste and imagination will spring mystically and unconsciously into sudden being. And if they don't spring into sudden being, so much the worse for taste and imagination.

It was a fault of the Renaissance tradition, from which our system of architectural education is sprung, that it ignored too often the practical common sense that must necessarily be the basis of a useful art like architecture. But that fault does not discredit the ardent and ennobling search for form that is the important fact about Renaissance architecture. Indeed, the effort to reconcile the needs of contemporary life with abstract conceptions of form is the very heart of the Renaissance. The Renaissance committed many absurdities, but never the supreme absurdity of mistaking a condition of beauty for its source. It never supposed beauty to be a by-product of science.

In truth, no activity requires so intense and sustained a concentration, so alert and subtle a power of discrimination, as the apprehension of spatial form embodied in a fine work of architecture. To create such works a most exacting and continuous discipline of the senses is absolutely necessary. It is no accident that architecture is the least understood and least popular of the arts, that its enjoyment is limited to a fraction of mankind. It is no accident that the world's great buildings are the work of men over fifty years of age. It takes about fifty years to educate an architect.

Now, you cannot tell a man how to create beauty or even how to apprehend beauty. If I tell my student that the Parthenon is beautiful he will write in his notebook that the Parthenon is beautiful. But he will probably have not the slightest notion of its beauty; not all the learning of the world can give him that. If I tell my student that the Parthenon is beautiful because it is "well-proportioned" or "refined," if I tell him, like Mr. Sheldon Cheney, that it was "produced" by functionalism, he will write that down; but that will not in the slightest degree help him to "produce" a Parthenon. He will be better off if I tell him nothing.

No doubt my analysis and criticism of buildings is of use to my student, but it is of use on the condition that I do not throw a screen of dogma or sentiment between him and their formal significances. No doubt the imitation of buildings, particularly of great masterpieces, is a natural and useful process in education; but this imitation

must be prompted by discovery and emulation, not by standards academically arrived at. He would be a strange composer who, having discovered Mozart, did not wish to imitate him; still stranger would be a playwright uninspired by Moliere. He who has not imitated the Parthenon has not discovered the Parthenon. That is one difference between the Parthenon and the City Hall of Philadelphia.

But these processes are relatively unimportant. What is important is the direct and constant search for form. It is most essential that the student throughout his college term should have not merely instruction and exercise in practical planning and building, not merely a growing awareness of the subtle and intimate relation of architecture to society, but, more fundamental than either of these, a sustained experience with esthetic form. It is the urgent business of the school of architecture to organize and direct this experience.

The processes of the school will not be understood unless this intention of the school is kept in mind. The programs in design are written and studied not only with a view to their actual execution but with the hope that they may offer opportunities for the exercise of taste and imagination. Criticism, methods of attack and presentation, judgments and awards are all directed primarily to this end; and although common sense may be commended, the first prizes must always go to those who, proceeding from common sense, arrive at beauty. Good economics, good sociology, good draftsmanship and good telephone service are excellent things; but let's not mistake them for architecture.

A JOB FOR ALMA MATER

By RALPH G. GULLEY, PROFESSOR OF ARCHITECTURE,
RENSSELAER POLYTECHNIC INSTITUTE

The shortcomings of architectural education, with its unchanging self-satisfied methods and retrospective tendencies, have become so obvious in the past few years, through the unprecedented growth in the demands made upon the architectural profession, and also in the apparent incapacity of the profession to serve its function satisfactorily, that those associated with the profession can ill afford to remain dogmatically attached to the established practices of nineteenth century tradition. To continue such a course further, in the face of demands made upon the architect for what he is not, will merely lead to further embarrassment. Indeed, it is not altogether improbable that such tenacious adherence to that which no longer concerns us may eventually lead to the profession's extinction, for it is true that the architect is already threatened with being consumed by that which he refuses to be.

We have come to forget the primary cause of our existence by allowing ourselves to become so absorbed in the dilettante game of applying architectural expression of every bygone civilization to our own in a futile effort to find a "fit" that we forget that we are architects and not historians and archaeologists. We do not live in the past; neither do we live for the past. It is mainly with the present that we must deal, and if we cannot reconcile our creative ability to such insistent factors as economic and sociological forces, mechanical fabrication, and standardized shop production of materials, we might as well count ourselves out. It is not for us to choose our situation. We can either accept it, and with it our responsibility, or else refuse it; and to refuse it is comparable with consigning ourselves to the scrap heap.

It is our business to equip ourselves with

the capacity to interpret, satisfy, and thereby express, the needs of our own age and civilization in the manner it demands. The result will automatically be our Architecture.

How are we then, as educators, to go about tackling the task we have cut out ahead for us? We might start with a consideration of the fact that we have many obsolete methods, much obsolete equipment and many antiquated ideas to dispose of. The educators' task is one that no one could envy. Whether the architect will be found at the helm of the master building organizations of tomorrow, or whether he will have bowed to the better equipped and have been forced to throw his lot with the "hired help," depends more upon the vision and efforts of the educators in the next few years than upon any other single factor. If we would succeed, one thing seems to be certain: our product will bear little resemblance to our product of today. Our product must be more thoroughly conscious of his task and more adequately equipped to take care of it. We must envision the state of affairs in which our students will find themselves in practice a few years hence. But before we can do that, we must take the pains to find out something about the present—even though it be distasteful to us to desert even temporarily the cloistered atmosphere of the academic circle to which we have become so accustomed that to go outside of it is to feel ourselves a stranger. Many of us cannot give attention to the crying needs of the present because of being still too much engrossed with the pretty-picture antics of the Ecole *poché* teams of the inglorious Nineties when *architectes* so loved their work that they could find no time to accept commissions. We must once and for all rid ourselves of such nonsense. We have had enough of paper architecture which results from the selfish motive of deriving personal pleasure at the expense of others in trying to express our individual selves. We have been steeped in "styles" for so long that there is no visualization of architecture unless it be accompanied by some parasitical label of recognition known as a "style". We have become so used to working contrary to logic that we have even taken the great movement now going on in Europe since the War and tried to play with it as just another "style". It would seem that our idea of Beauty is only skin deep after all.

Arriving at an architectural result is a process—a process of mental organization—and if we would avoid the pathetic results caused by our approaching our problems with the cart before the horse, we must learn to think of this process (call it *Architectural Design*, if you like) in terms of analysis, research and investigation, correlation, and synthesis, with due consideration for all factors concerned; and not as a purely imaginative process based upon the arbitrarily accepted opinions of "taste." Only by this method can we hope to avoid the superficial *appliqué* and the superfluous inconsistencies which characterize almost all of our architecture. Our architecture can only then be the definite result of satisfied function, and no longer an arbitrary initial choice of accepted forms into which we try to squeeze our necessarily distorted functional elements.

Let us not concern ourselves with whether architecture is more of an art than a science, or vice versa: rather let us think of it as the art of organizing and applying the sciences of building to the best interests of every consideration and requirement involved in a given condition. We have been so afraid of losing our identity in the rushing torrent of scientific advancement that our reactionary endeavors to champion the noble cause of Art have blinded us in estimating our own potentialities. Our identity as Architects depends upon our being thoroughly well-rounded, and we cannot afford to be influenced into making an art course of architecture for the student who is more of an artist than a scientist and engineer; nor can we afford to make a purely scientific and engineering course for the student who

is more of a scientist and an engineer than an artist.

Let us give attention to the dead wood in our curricula and among our faculties. Let us then consider how our courses might be more effectively correlated. For instance, we might consider the ineffectiveness of teaching design and construction as two distinctly separate courses when one is so inseparably the counterpart of the other. The problems in design could easily be made the problems in construction. If we would intelligently relate our courses, we might encourage the members of our staffs to work together more harmoniously and sympathetically.

Why can we not teach the history of architecture and art as *history*, and not as a course for gaining an architecturalvocabulary of ready-to-use motives and solutions? Historical developments in architecture and art must be related to the economic and social factors responsible for their evolution. History is most valuable through the application of the deductions we draw to our problem of understanding and interpreting the nature of the Present.

We should see to it that each successive problem given in design is a definite step in a carefully correlated scheme of progression. And can we not remember that the whole purpose of giving problems in design is defeated when we allow a problem to be made an end in itself? The problem is but a *means* to an end, and the chief end is making it a source of supplying the student with the mental stimulus necessary for him to develop his analytical powers, his ability to cope with the various considerations, to apply intelligently his acquired technical knowledge, and the capacity to crystallize these considerations into a unified solution which will give the best obtainable result within his power to produce. We must avoid the possibility of a problem serving as a means of glorification for the student, the critic, or the school. Therein lies the possible danger of interschool competition. Everyone involved in such participation is influenced in his actions by feeling subconsciously that his reputation is at stake.

That nationally known institution, the Beaux Arts Institute of Design, through which much of our work in competitive design is carried on, has little to offer the school with a staff able to produce its own schedule of programs. Such competition, as conducted at present, encourages our making the problem itself the desired end, and it may be repeated that this is not a desirable thing to do. The B.A.I.D. has sponsored a noble undertaking, and credit is given where credit is due, but its task is almost too stupendous to be put upon the shoulders of those competent men who cannot afford to give of their whole time and energies as needed to make its purpose function as satisfactorily in execution as it should. Poor programs, and hasty judgments often rendered at the mercy of disinterested and dilettante jurors, have pointed to the inadequacy of such a system under the conditions in which it is now forced to operate.

Let us not be afraid to develop in our students a desire for sympathetic collaboration with all parties concerned in building activities, and to point out to them that such is the only possible means by which we may reach a satisfactory result. Out of understanding each other will grow a much needed respect for the part that each plays, and it will be clear that one does not function efficiently without the others. Subject the student to the principles of economics, finance, building promotion, business administration, and to the possibilities of research in chemistry and physics as applied to modern building problems, such as acoustics, illumination, color and the materials of construction. These will undoubtedly play a large part in the architect's future activity and only by his acquaintance with such considerations can we expect him to deal competently with that which he must, if his professional services are to be indispensable to the progress of his age.

THE VAN NELLE FACTORY, ROTTERDAM

J. A. BRINKMAN AND L. C. VAN DER VLUGT, ARCHITECTS

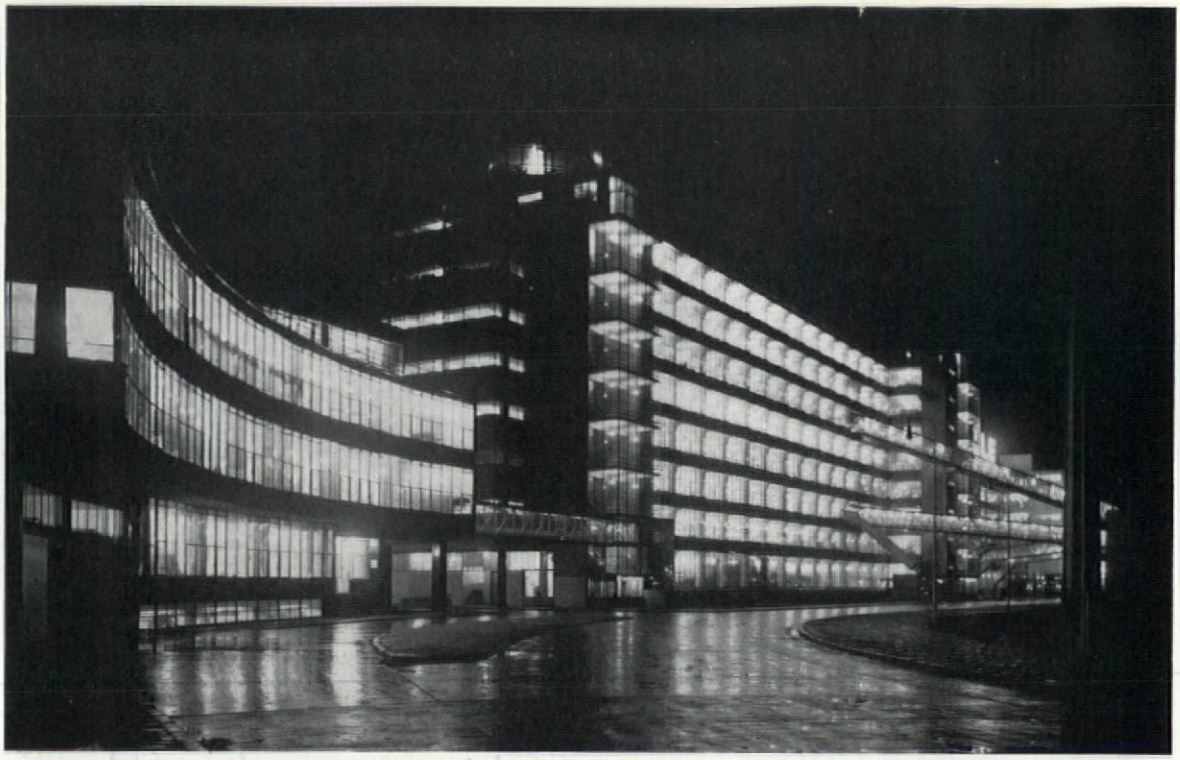
Plan, construction and specific features of the factory units of this plant were described in detail in the October 1929 issue of THE ARCHITECTURAL RECORD. Since then additional units comprising office building, cafeterias, store building, shops, garages and playfields have been added.

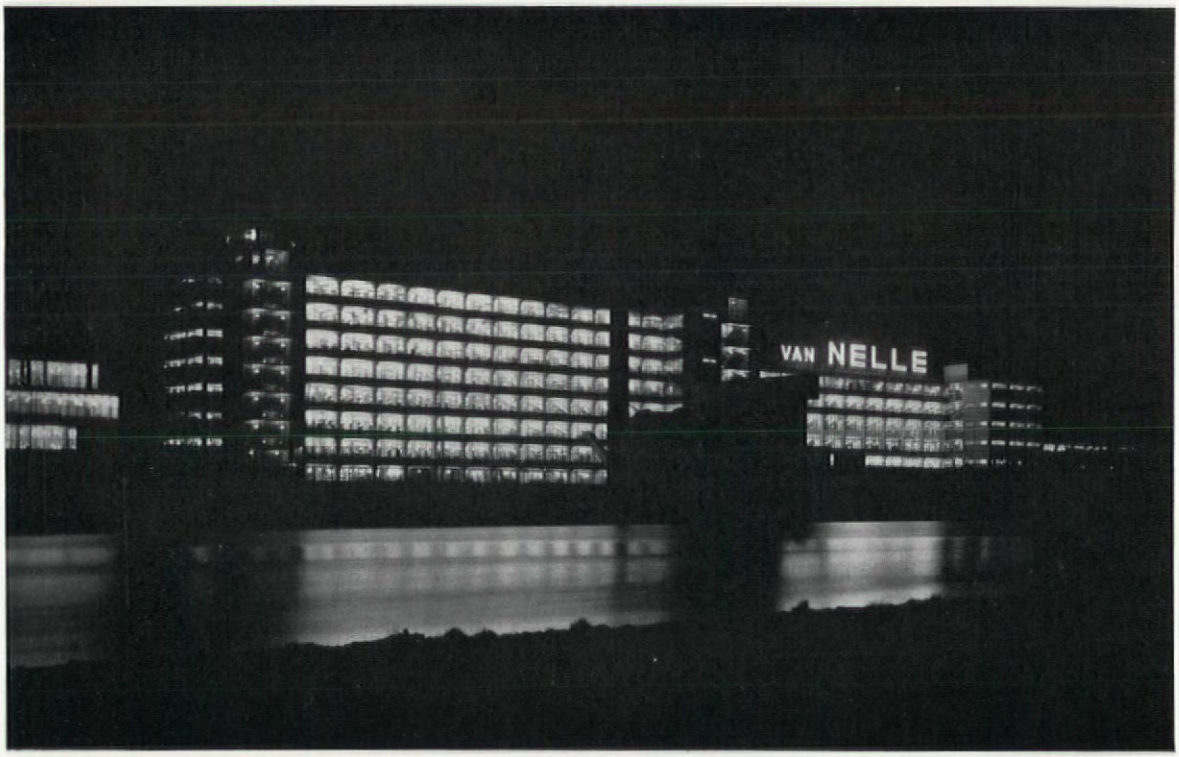
LAYOUT

The three units of the factory building house the machinery for packing tobacco, coffee and tea. Power plant, storage, shops and garages are placed toward the river. The curved building between the gate and the main building contains offices, cafeteria for employes, library, etc. A tea room with observation platform is placed in the circular structure on the roof of the factory building. At the rear of the lot are football fields and tennis courts, with dressing rooms for employes and workers, and workers' cafeteria. Space for future expansion is provided between the playfields and the factory building.

CONSTRUCTION

Columns and floors, reinforced concrete. Mushroom system in factory building with column spacing determined by the machine layout. The cantilevering of the floor provides a corridor along the exterior wall for conduits, heating pipes and traffic. Spandrel units of steel, two sheets with 3 cm. *Torfoleum* insulation between. The exterior plates and the sash are spray-coated with zinc. The windows can be cleaned from a *Tramrail* cage driven on a rail that follows the roof lines of the buildings.





Night lighting for advertising.

VAN NELLE FACTORY, ROTTERDAM
J. A. BRINKMAN AND L. C. VAN DER VLUGT, ARCHITECTS

Gatehouse, office building and factory with observation platform and tea room.

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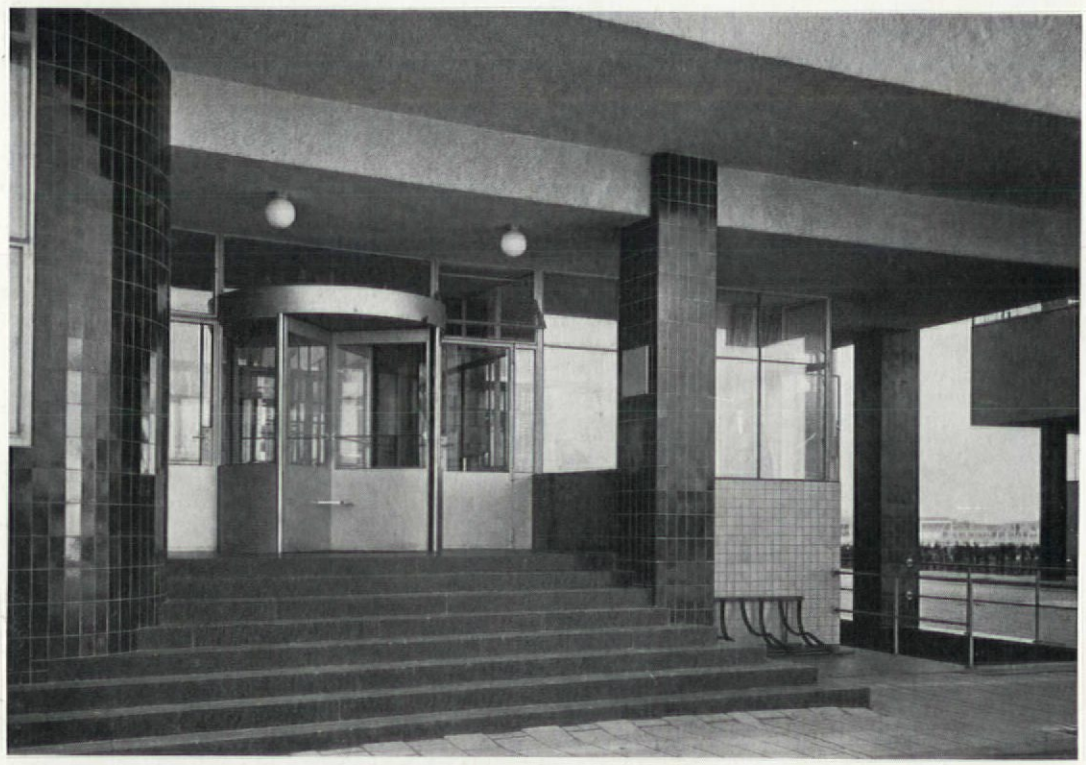
View from gate.



Entrance to office building. Black and yellow glazed tiles, aluminum.

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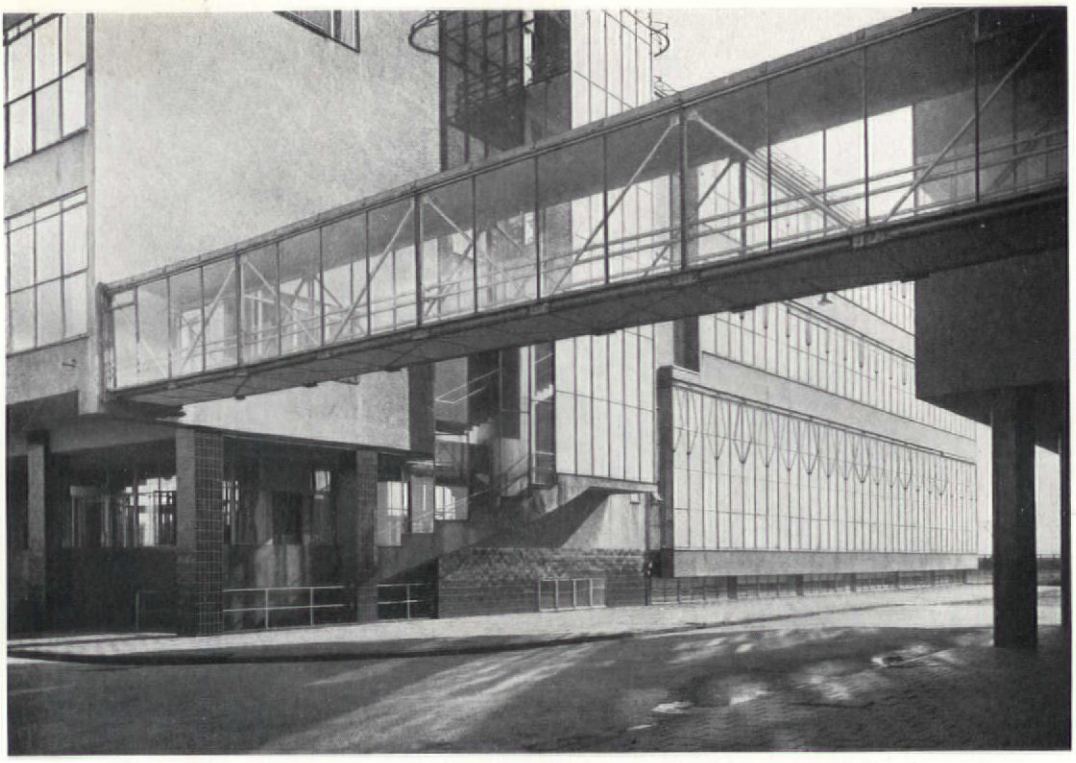
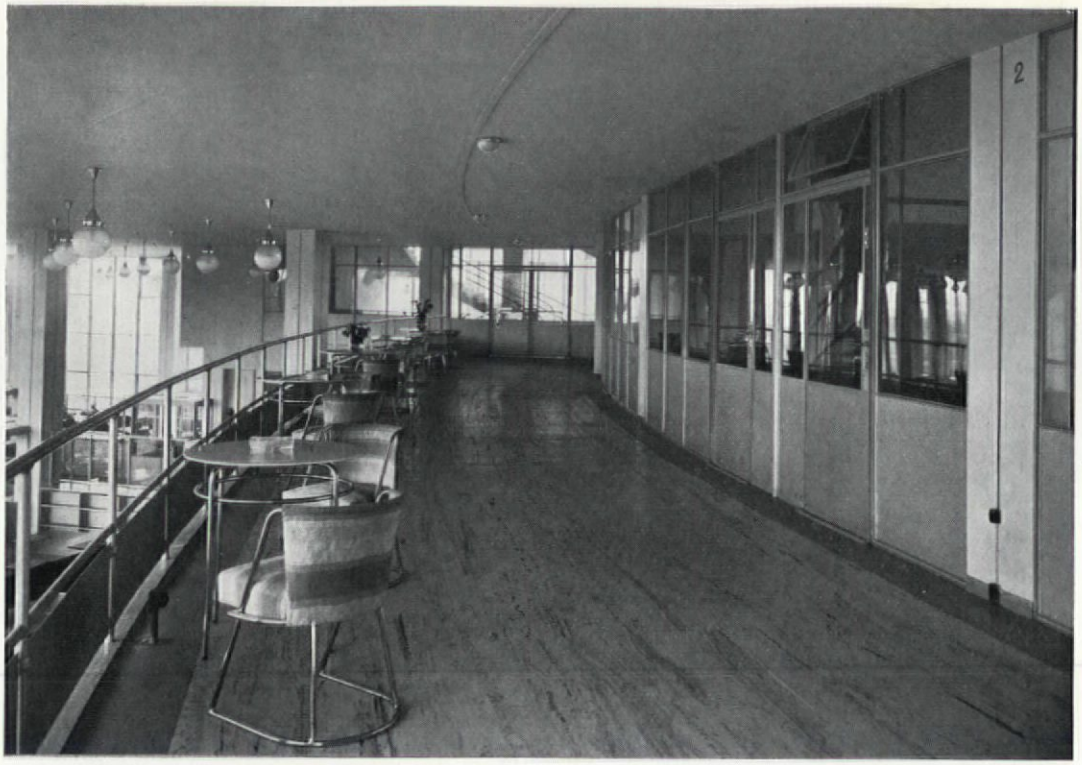


Bridge from office building to factory. Tubular steel construction.

Employes' cafeteria on top of office building.

VAN NELLE FACTORY, ROTTERDAM
J. A. BRINKMAN AND L. C. VAN DER VLUGT, ROTTERDAM



Waiting room in front of executive offices overlooking general office. Blue and gray rubber flooring. Chromium-plated furniture. Aluminum partitions.

General office with conversation booths for each department. Blue and gray rubber flooring. Aluminum partitions.

VAN NELLE FACTORY, ROTTERDAM

J. A. BRINKMAN AND L. C. VAN DER VLUGT, ARCHITECTS

ARCHITECT'S FEE IN GETTING BUSINESS

BASED ON OFFICE PRACTICE OF ROBERT D. KOHN, AND SHREVE, LAMB AND HARMON, ARCHITECTS

Payment for the architect's services frequently has an important influence on the ability of the architect to obtain profitable work. The basis for payment should be determined by the architectural service which a particular project will require. In some cases the straight percentage basis will be found entirely satisfactory; for other types of work, especially large buildings where the plan of a typical unit or floor is repeated to a considerable degree, a fixed fee will frequently be found most satisfactory to the prospective client. For types of jobs which will require a great deal of architectural work in proportion to the value of the finished job, some form of cost-plus fee will frequently be found most equitable and satisfactory to both the client and the architect.

COST-PLUS FEE

Example: *Robert D. Kohn, Architect.* Mr. Kohn believes that for most work the cost-plus fee is the best basis for payment. He points out that an architect can give more time to the study of a project when it is on this basis than on a percentage or straight-fee basis. The cost of the additional study will generally be reflected in a better building at a lower cost. Theoretically an architect is always ready to scrap his plans if he sees an opportunity for improving them; but as a matter of fact the architect has a justifiable objection to any changes in his preliminary plans which will cost him his own money. Should the change in plans result in a reduction in cost of the project, it is decidedly unfair to the architect for him not only to stand the cost of making changes which save the owner money but also to have his fee reduced through lowering the cost of the project on which his fee, if on a percentage basis, is based.

In convincing the prospective client of the value of a cost-plus fee service, it is well to have in the contract a percentage limit to the amount which the architect will receive.

Form of Cost-Plus Fee Contract: Mr. Kohn uses the *Standard Form of Agreement Between Owner and Architect* (issued by the American Institute of Architects), when a percentage of the cost of the work forms the basis of payment. He makes the following insertions and modifications:

On the bottom of the first page, under "The Owner agrees to pay the Architect for such services a fee of," he inserts "*not to exceed seven per cent of the cost of the work*, with other payments and reimbursements as hereinafter provided, the said percentage being hereinafter referred to as the 'basic rate'." He also adds, "*and three per cent on the mechanical trades, as noted in paragraph 13.*"

In Section 2, Reimbursements: "The owner is to reimburse the Architect the costs of transportation and living incurred by him and his assistants while traveling in discharge of duties connected with the work." The phrase—"*and the cost of the services of heating, ventilating, mechanical and electrical engineers*"—is crossed out.

In Section 5, Payments: "Payments to the Architect on account of his fee shall be made as follows, subject to provisions of Article 4, "*and as outlined on the following page, (Par. 13).*" Paragraph 13 follows: "The Architect is to receive in compensation for his work: (a) the direct cash expenditures of his office in the payment of the salaries of his staff and other assistants of any character for necessary work done while engaged on this project; (b) plus 50% of this amount to cover the office overhead; (c) plus a charge for the time of the principals of the Architects' firm charged for on a salary basis when the time of these principals is directly devoted to this work; (d) plus one-third of the total amount produced by the addition of items (a, b, c) as profit; (e) plus the net cost of blueprints; provided that on this cost-plus basis of calculated fee the total amount (a, b, c, d, e) is not more than the basic rate previously mentioned.

"It is further agreed that the total amount paid to the Architect shall not in any case exceed the basic rate of 7% on the cost of the general construction work of the proposed building, and that on the cost of all Heating, Ventilating and Electrical work on which the owner pays the fees of Consulting Engineers the amount paid to the Architects shall not exceed the basic rate of 3%.

"The Architect will render bills to the Owner for services on or about the first of each month for sums due him under this agreement based on the costs up to the end of the previous month, and these bills are due when rendered and are to be paid before the 15th of the month. It is understood, however, that the

through periodic visits to the work and does not total of these bills rendered up to any particular time is not to exceed, in proportion to the maximum fee that would be due at the completion of the job, the ratio established by paragraph 5 that the Architect's work up to that time bears to the total work which he is to perform."

The cost-plus fee is a particularly suitable arrangement where the architect has a more or less permanent consulting relationship with a large client. Such a contract not only takes care of all kinds of jobs which the client may have coming up but permits the architect to make special studies for the client which may result in the client building when he might not otherwise build.

Ethical Culture School, *Kohn and Stein, Architects:* This job was taken on the basis of draftsmen's time plus a percentage for office overhead, architectural services and profit. The early sketches were for a large fireproof structure to house the entire school. After much study (more than an architect could ordinarily afford to give on a fee basis), it was found that a better and less expensive school system could be provided if housed in small connected units. In this case the client obtained a better building at a lower cost than he probably would have had under the fee system, and the architects were enabled to work out a thoroughly satisfactory solution without financial loss to themselves.

FLAT FEE

Example: *Shreve, Lamb and Harmon, Architects.* This firm believes that for large buildings the architect should receive a flat fee for his work. They feel that a fixed percentage for architectural work, regardless of the type of job, is not a satisfactory method of procedure; that the architect who demands a flat percentage contract before making any study of the client's problem frequently loses an opportunity of developing real business. They prefer to have a conference of the members of the firm to consider all the requirements of the prospective job, analyze drafting and overhead costs of similar jobs, and arrive at a definite cost budget for the job at hand; to this budget is added the desired profit. The result is a very simple form of contract with the client, shown as follows:

Contract Form:

Dear Mr.———:

We write to confirm statements previously made to you as to the nature of our services as architects and the terms of our employment in connection with your proposed ——— building to be erected at———. We will render professional services in accordance with the enclosed memorandum and will do all of the work listed for a fee of $———, this amount to be paid to us in stated payments, as follows:

1. Upon approval of preliminary sketches and authorization to proceed with the working drawings, the sum of..... $———
2. Monthly thereafter on the first day of each month the sum of $——— until we have received in such payments the sum of..... $———
3. Upon approval of structural plans and specifications by the Bureau of Buildings the sum of..... $———
(or enough to make the total amount paid us at this state equal to $——— or ——— of the total fee.)
4. Monthly thereafter during the progress of the work on the first day of each month, the sum of $——— until these payments shall amount to..... $———
Thirty days after substantial completion of the building the balance, to wit, the sum of..... $———

Total..... $———

The professional services of Shreve, Lamb and Harmon, architects for this work, will include:

1. Necessary conferences with the Owner or with the Builder (and Owner's Real Estate Agents).
2. Further study of preliminary sketches which have had preliminary approval.
3. Submission of sketches to Municipal Authorities for preliminary approval of project in relation to Zoning Ordinance.
4. Preparation of preliminary specifications.
5. Preparation of the working drawings including plans, elevations and sections, large scale and full size detail drawings.
6. Preparation of complete specifications by trades.
7. Checking necessary shop drawings.
8. Cooperation with engineers engaged by (us) (Owner) for the design of the structural steel, heating and ventilating, plumbing and electric work, and elevators, and the incorporation in the structural plans and specifications of any features necessary to provide for mechanical equipments.
9. Cooperation with the Builder in preparing the schedule for the execution of the work and in the award of such subcontracts as may be let.
10. Preparation of drawings and applications for submission of work to the Municipal Authorities for their final approval.
11. Keeping contract records showing the cost of the work as reported to us through general contracts, subcontracts, or vouchers, on account of which cost we will from time to time certify to the amounts due the General Contractor.
12. Supervision as necessary to assure that the work is being executed generally in accordance with the plans and specifications. This supervision will be

mean continuous supervision or detailed inspection of materials or executed work.

13. The above services are related to the basic building and standard or typical subdivision of spaces, and do not include special work for tenants or non-typical tenants' layouts, or special finish of spaces which may be occupied as executive offices or banking spaces for which detailed drawings of wall, floor and ceiling treatment or special equipment will be required.

14. If, after drawings have been approved, changes are made necessary by decision of the Owner or by any cause beyond our control, we are to be compensated for the work of making such changes and bringing the drawings up to the stage previously approved. Such compensation shall be not less than ——— times the cost of draughtsmen's time required to make the changes.

15. The furnishing of ——— sets of copies of all working drawings, specifications and details. Any additional copies are to be paid for by others, and any disbursements made by us on the Owner's account, such as traveling expenses, telephone toll charges, telegrams, etc., are to be repaid to us."

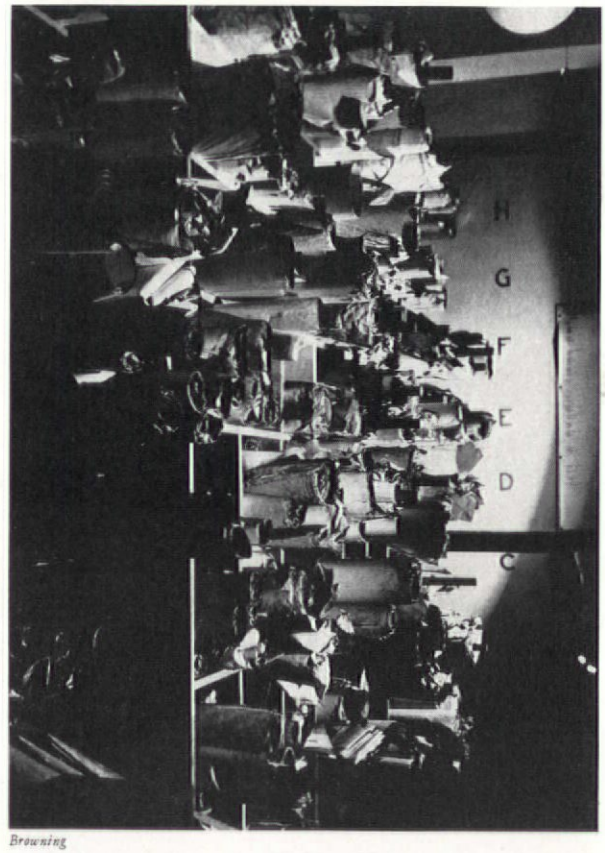
FILING BLUEPRINTS

By ERICH SCHMIED

One of the most difficult problems in all offices is the proper handling and filing of blueprints. For years contractors have used pigeonhole files or racks similar to those used for newspapers in libraries. Many other systems have been tried, all of which proved bulky and a continual source of lost time and energy. We have developed in our office a complete system for filing all kinds of data, including contractors' drawings, estimates, and special job data. This entire system has been built around a method for filing blueprints.

The system is absolutely uniform for all types of data as well as for blueprints. It is sufficiently flexible to permit the filing of blueprints separately from the job files and the other data. In addition, this scheme eliminates all waste space, is economical, and can be operated quickly.

The office is equipped with cap-size drawer type (vertical system) filing cabinets of standard manufacture. We begin by starting a "Job File," which consists of contract documents, reports, costs, etc. A card separates each class of information. We call this the "Estimate File." In it is the detailed estimate filed in accordance with the classifications. Following is a division for correspondence containing a folder for each firm connected with the job; thereafter, a division for the complete original set of architectural drawings (blueprints); then one



Browning

This is what happens when blueprints are filed away in pigeonholes. In the accompanying article Mr. Schmied, who is president of the S. & W. Construction Co., Memphis, Tenn., describes the system he has developed to preserve the blueprints.

for the complete structural drawings, followed by the complete mechanical drawings.

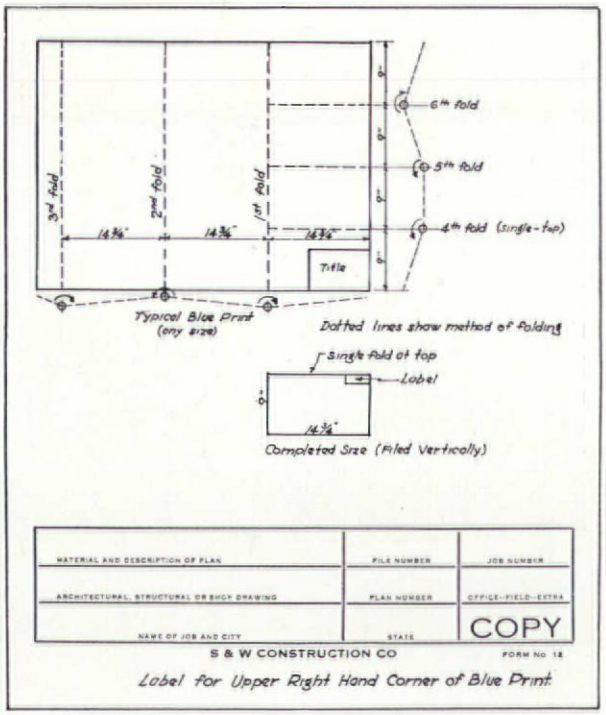
We file everything numerically, employing a system similar to the Dewey System used in many libraries throughout the country. The numbers, however, do not correspond with the Dewey System. As a matter of fact, we obtained the original numbering system from the A.G.C. classifications which were devised some years ago. This system is carried on throughout the office files. All data are filed under these classifications. Consequently, in our job files, all matter pertaining to one subject or item of work is filed under that particular classification and can be readily found. All shop drawings are likewise filed under these same classifications. Beginning with the card index known as "Shop Drawings," we then have a number of tab indexes in our file, each with a classification number indicating the type of work covered by the blueprints which follow the tab. The blueprints are then filed according to the number of the sheet in the title. We file therein the preliminary approved copies, together with the final approved copies. Quite naturally this system can be carried on indefinitely. Our label takes care of the replacement, or the proper filing.

The blueprints are folded according to the system which is illustrated herewith. This method has the following advantages: first, the title can always be found in the lower right-hand corner of the folded sheet; second, the upper fold, which is exposed when the file is opened, is in the form of a single fold, within which may be found the entire blueprint; third, the index system can be applied to a sticker label placed in the upper right-hand corner of the folded blueprint. On this sticker is recorded the job number, classification number, sheet number, class of work and job.

In using this scheme we have found that any large project involving the use of many blueprints can be taken care of with one or two ordinary standard section steel files. Every shop drawing and every blueprint of any kind can be found at a moment's notice.

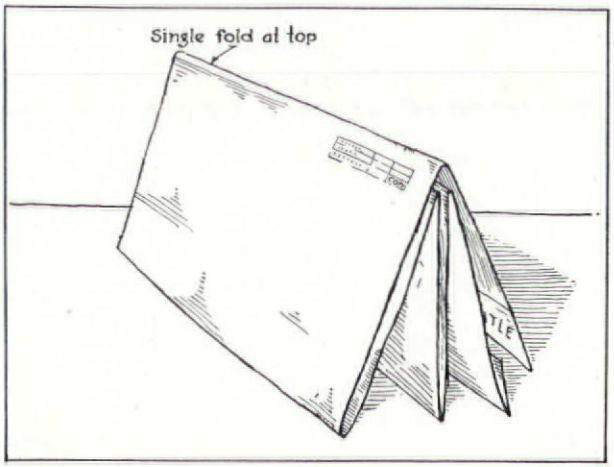
The accompanying sketch shows the method of folding the blueprints. This is perhaps the most essential part of the work. We believe that this additional amount of effort saves hours of labor in hunting for blueprints which might otherwise be scattered or filed in rolls. The saving of time in obtaining any desired print is so marked that once this system has been used one will endorse it without further discussion.

The method of folding the blueprints applies to drawings of any size or shape unless the print itself is smaller than the cap-size sheet required for the standard file. In this event we paste it on a larger sheet of paper. For any size larger than the cap-size sheet of paper this method of folding will apply. We have used it for sheets as long as fourteen feet by eight feet wide, with equal success. One needs only a small amount of practice in order to make the fold of each blueprint accurate. Rough-edged blueprints should be trimmed before folding; this also eliminates the necessity of filing a great deal of waste paper.



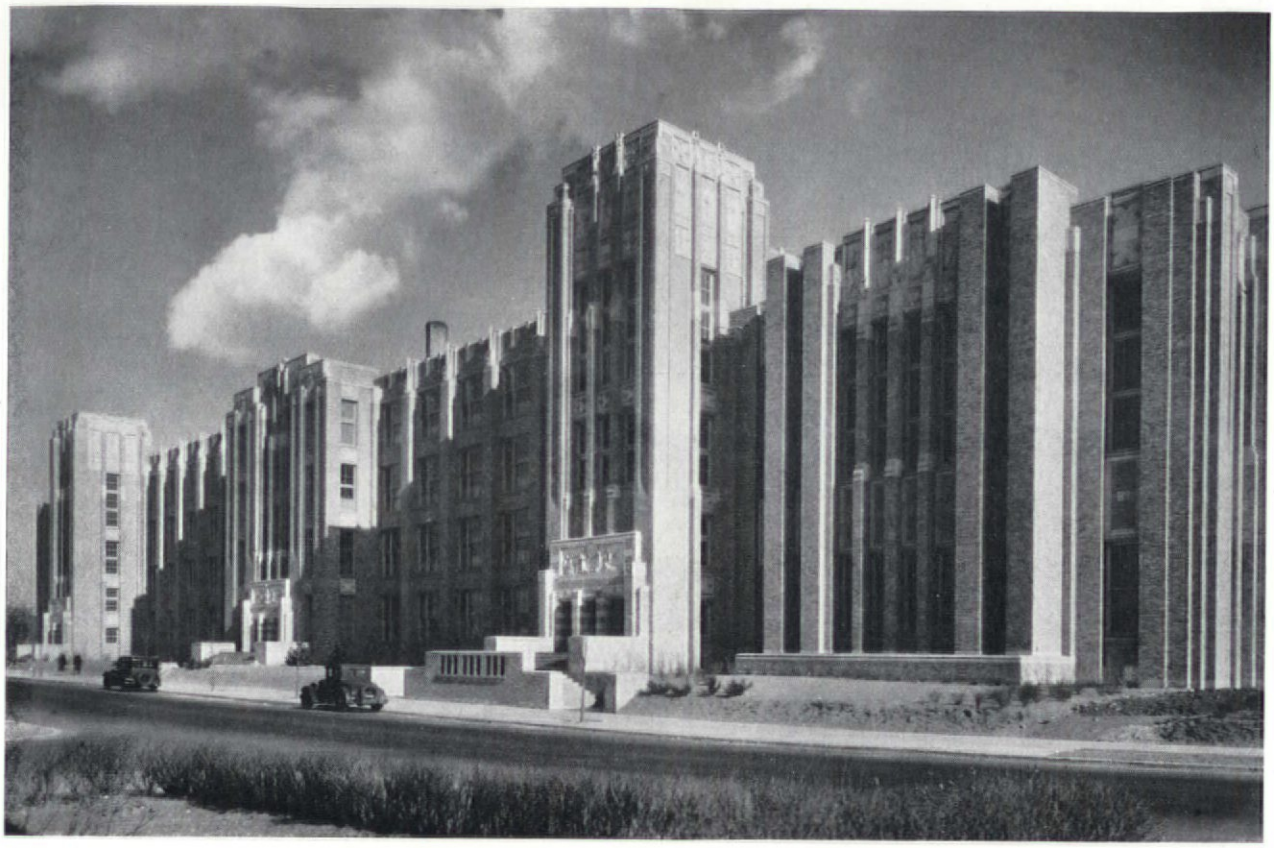
Label for Upper Right Hand Corner of Blue Print

DIAGRAM FOR FOLDING DRAWINGS AND BLUEPRINTS



A FOLDED BLUEPRINT READY FOR FILING

TECHNICAL NEWS AND RESEARCH



VON STEUBEN JUNIOR HIGH SCHOOL, CHICAGO
PAUL GERHARDT, ARCHITECT

PLANNING ELEMENTARY CLASSROOMS TO MEET PRESENT-DAY CURRICULUM DEMANDS

By Prof. N. L. Engelhardt

THE DEVELOPMENT OF THE JUNIOR HIGH SCHOOL IN CHICAGO

By Ralph W. Yardley, Architect

THE VON STEUBEN JUNIOR HIGH SCHOOL, CHICAGO

Paul Gerhardt, Architect

Chicago Architectural Photographing Co.

VON STEUBEN JUNIOR HIGH SCHOOL, CHICAGO
PAUL GERHARDT, ARCHITECT

PLANNING ELEMENTARY CLASSROOMS

By Prof. N. L. ENGELHARDT, Associate Director

Division of Field Studies, Institute of Educational Research
Teachers College, Columbia University

In recent years many significant changes have taken place in the planning of school facilities. The libraries, auditoriums and special laboratories of the high school have seen a greater adaptation of space and equipment to educational utilization. Administrative facilities of all types of buildings have been highly improved. In the kindergarten has been witnessed the transformation of mere space into a charming comfortable work and play place for children. The elementary classroom, however, remains today in large degree as it was incorporated into buildings twenty and thirty years ago. Probably of all spaces in school buildings devoted to educational purpose, the elementary classroom has seen the least significant change in the past twenty years. The reasons may be found in the slowness with which curricula have been altered, the hesitation to adopt new methods of teaching, and the unwillingness to substitute new educational activities for the old.

Elementary classrooms that are unattractive, unadorned and highly institutionalized in nature are to be found in large numbers. In part, the users of these classrooms, namely, teachers and administrators, may be responsible for the rather barren and formidable appearance of classrooms. In large measure, however, those who have planned the school buildings and the classrooms are responsible. There has been too great a tendency to accept the elementary classroom as a fixed and unchangeable phase of planning. Too little consideration has been given the adaptation of elementary classroom space to the changing needs of teachers or to the effort to make convenience and comfort serve elementary teachers to a maximum degree.

The spirit which has permeated teaching to an increasing degree during recent years has left its definite impress upon school building planning. The laboratory idea has been carried from the physical sciences into the social sciences, and into literature and the languages. It may be that as teaching becomes more highly developed, the mere classroom as such will have taken on more and more of the laboratory aspect. This, no doubt, would meet with the approval of the most progressive teachers. There are to be found in the United States modern language classrooms which, in large measure, reproduce the atmosphere of the country whose language is being taught. Here and there one finds the barrenness of the average mathematics room giving way to a room in which beauty and mathematics are combined. The music room sometimes takes the form of a little chapel. The household arts laboratories have been rapidly assuming a real home atmosphere. A changing appreciation of the results to be achieved in the educational process and a definite desire to make the class and laboratory facilities contribute toward that end have brought about these desirable changes in building planning.

The elementary classroom with three walls of blackboard, limited bulletin space and perhaps a cupboard or two surely does not present a very inviting appearance. Architectural skill has not been devoted in sufficient measure to the improvement of these boxlike rooms. To be sure, requirements of natural lighting and problems of ventilation and heating make the task difficult, but architectural genius should apply itself to making attractive these rooms in which young children are re-

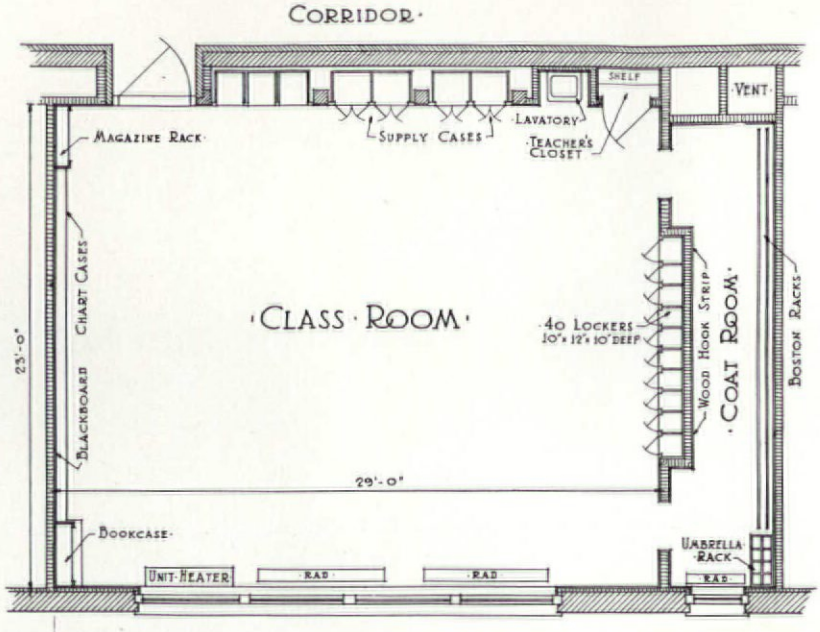
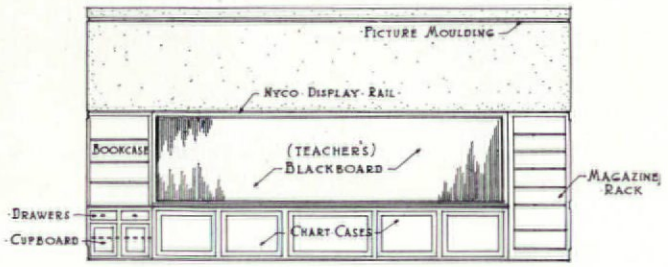
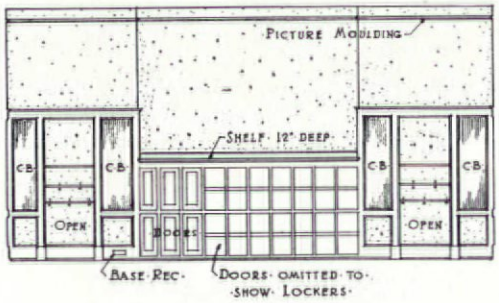


ILLUSTRATION No. 1



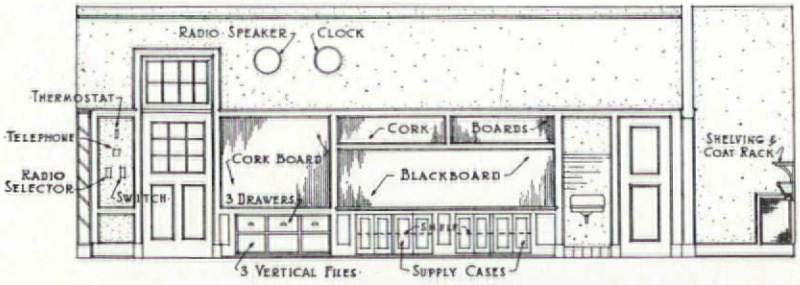
ELEVATION OF FRONT WALL

ILLUSTRATION No. 2



ELEVATION OF REAR WALL

ILLUSTRATION No. 3



ELEVATION LOOKING TOWARD CORRIDOR WALL

ILLUSTRATION No. 4

FISHER AVENUE SCHOOL, WHITE PLAINS, NEW YORK
STARRETT AND VAN VLECK, ARCHITECTS

quired to spend such a significant part of their early life. Costs must be kept down but barrenness and all repellent elements should give way to pleasurable surroundings.

A perusal of the 390-page volume on *Standard Equipment and Supplies for the Kindergarten, Grades I to VI, Inclusive, and Special Class of the Public Schools of Berkeley, California*,[1] will make clear why classrooms and kindergartens should be provided with far more shelving, cupboards and storage receptacles than has been given these rooms in the average planning. This volume on equipment demonstrates that the modern teacher is working with more of the real materials of life and is associating the learning processes with classroom activities in which materials of all kinds are being utilized. Under this modern program some very distinctive administrative problems arise, such as (1) making available materials of instruction, and (2) conserving teacher time for instructional purposes. Any planning of a classroom which will make teacher time more productive in terms of educational results will be highly welcomed by administrative officers and boards of education. It is reasonable to suppose that slightly additional cost put into the original planning of classrooms will be more than offset over a period of years by teaching made more effective as a result of availability of materials at time of need.

WHITE PLAINS PLAN

Illustration No. 1 shows a classroom developed in accordance with what might be called the White Plains plan. This classroom is one incorporated in the Fisher Avenue School, White Plains, N. Y., planned by Starrett and Van Vleck, architects, and George D. Strayer and N. L. Engelhardt, educational advisers to the Board of Education.

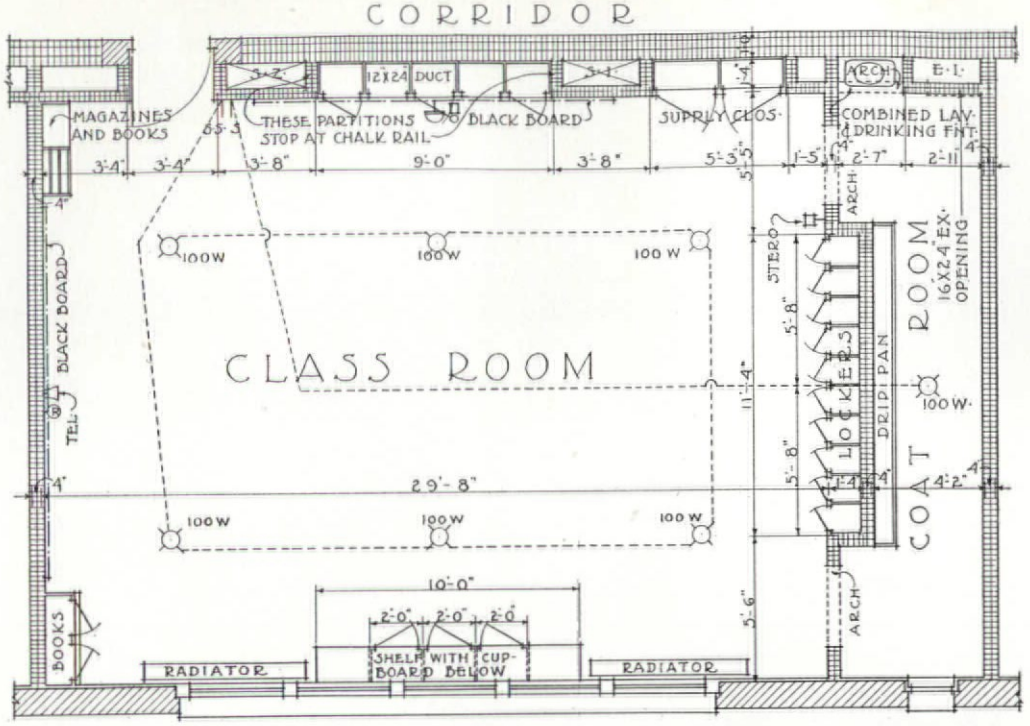
At the front of this classroom are bookcase and magazine rack, blackboard space and chart cases underneath. On the right side of the room are found vertical files with cork board above, a limited stretch of blackboard with shelves in cupboard arrangement below, a lavatory and a closet from floor to blackboard height. The rear of the room makes provision for 40 lockers 10″ x 12″ x 12″ deep so that each child in the classroom may be provided with his own receptacle space. Doors are furnished these lockers. Thus in this entire room will be found space for large charts and maps, for books and magazines, for the filing of tests and other letter-size paper, for the preservation of materials such as tools, baskets, grocery sets, card sets, card holders, clock dials, and many of the other similar materials to be found in the equipment list mentioned above. A lavatory makes possible the teaching of health habits, and the individual pupil lockers will tend toward orderliness and the recognition of the rights of all members of the social group.

The front wall of this room, in which the relationships between bookcase, drawer space, cupboard space, chart cases and magazine rack appear, is shown in Illustration No. 2. Note the display rail making possible rapid adjustment of hooks for the display of maps or charts.

In Illustration No. 3 will be found the rear wall of this classroom, with its individual lockers, its base receptacle for stereopticon or sound pictures, and its cork board bulletin spaces on either side of the openings to the cloak room. The locker spaces have permitted a recess in the rear wall which may be made into an attractive nook and may vary from room to room according to the desires of teacher and pupils.

As shown in Illustration No. 4, the space between the door and the front wall is used for the placement of thermostat, telephone and radio selector, while the radio speaker itself takes a position near the clock and may be expected to draw even more pupil attention than the clock has done in the past.

[1] Smith, Lewis W., Superintendent of Schools, and Minor, Ruby, Director of Kindergartens and Elementary Education. Berkeley Public Schools, Berkeley, Calif. June, 1929.

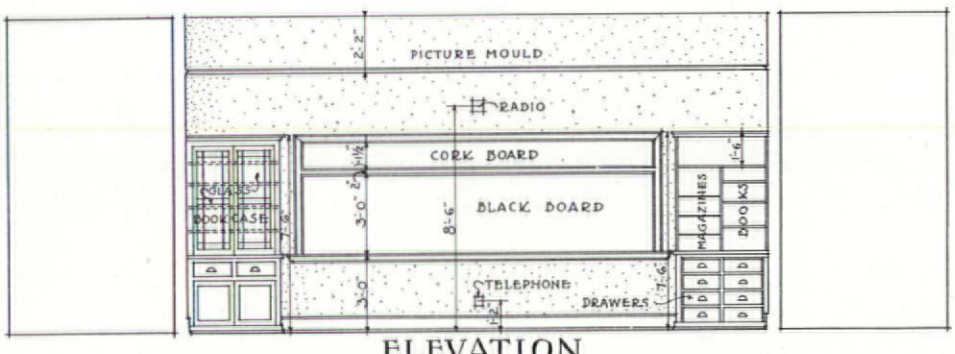


·TOOKER & MARSH· ARCHITECTS·
·101 PARK· AVENUE· NEW·YORK·CITY·

TYPICAL PLAN

·GLENMORE·DRIVE·GRADE·SCHOOL·
·NEW·ROCHELLE· ·NEW·YORK·

ILLUSTRATION No. 6



ELEVATION

ILLUSTRATION No. 7

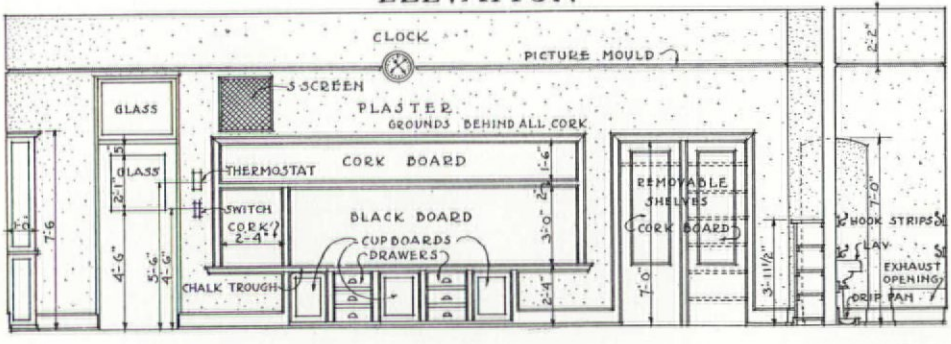


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ILLUSTRATION No. 8

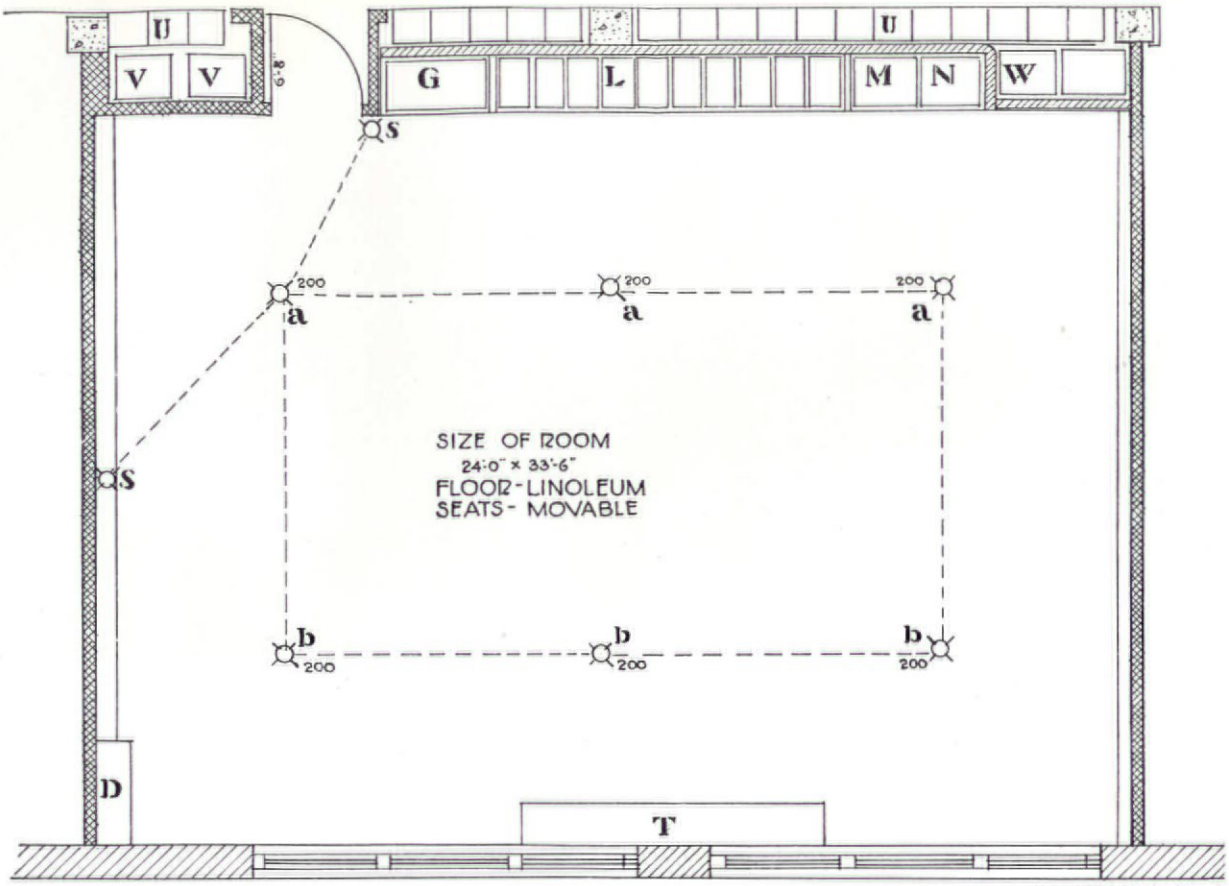


ILLUSTRATION No. 8

ELEMENTARY CLASSROOM, NEW OYLER SCHOOL, CINCINNATI
SAMUEL HANNAFORD AND SONS, ARCHITECTS

A = Teacher's blackboard: 3′ 6″ x 17′ 0″—set 2′ 9″ above floor.

B = Pupil's blackboard: 3′ 0″ x 19′ 0″—set 2′ 4″ above floor.

C = Corkboard on walls and doors as indicated.

D = Book case: 19 feet of shelving.

E = 4 floor cases for charts and posters: 28″ x 48″ x 4″ inside.

F = Magazine display rack: 19 feet of display.

G = Storage case: adjustable shelves—42″ x 19″ x 42″ high inside.

H = 2 drawers: 19″ x 18″ x 7″ high inside.

I = 2 vertical files: 19″ x 18″ x 14″ high inside.

K = Picture space 11′ 3″ long; recessed 8″ over mantel 10′ wide—top 4′ 3″ above floor.

L = 40 pupils' cupboards: 12½″ x 19″ x 10″ high inside; door for two.

M = Closet for lavatory and bubbler: 24½″ x 19″ x 75″ high inside.

N = Teacher's closet: 24½″ x 19″ x 75″ high inside.

O = 6 windows: sill 3′, or more, above floor—top of glass 12′ 0″ above floor; ceiling as close to top of glass as possible to increase reflection; 2 shades to each window, hung at meeting rail; glass deflectors at 4 windows over radiators.

P = 4 supply cases under window shelf: adjustable shelves; 24″ x 12″ x 34″ or more high inside.

Q = Picture molding 20″ below ceiling.

R = Map and display rail: 17′ long.

S = Electric wall plug for lantern.

T = Window shelf: 16″ wide x 10′ 0″ long.

U = 20 corridor lockers: 15″ x 15″ x 60″ with 2 shelves near top—set on sanitary coved base.

V = Vents: ducts 18″ x 24″.

W = Air supply: ducts 18″ x 24″.

NEW ROCHELLE PLAN

Another variation in elementary classrooms may be called the New Rochelle plan because of its incorporation in the Glenmore Drive Grade School, New Rochelle, N. Y., by Tooker and Marsh, architects. Illustration No. 5 shows this classroom, with bookcases, magazine rack, drawer spaces, telephone and radio at the front part of the room. At the right will be found blackboard, cork board, file spaces, and coat and supply closets. To the rear are the pupil lockers with arched openings to the coat room. In the coat room is a lavatory and provision for coats and umbrellas. On the window side, in between the radiation, is shelving with cupboards below.

Illustrations Nos. 6 and 7 show the front and corridor side elevations of these classrooms. Teachers working in these rooms have every opportunity of storing materials which they use and are invited, because of the arrangement of the room, to bring in materials which they might not otherwise provide. Rooms like this may also become exceedingly attractive and homelike, and in their atmosphere tend to develop desirable qualities in children.

CINCINNATI PLAN

Some of the initial planning looking forward to the change of elementary classrooms was done in Cincinnati under the direction of Superintendents Condon and Roberts with Dr. Clarence Kingsley as educational adviser. Illustration No. 8 shows the Cincinnati plan incorporated in the New Oyler School for which Samuel Hannaford and Sons of Cincinnati were the architects and George D. Strayer and N. L. Engelhardt, educational advisers. Here the elementary classroom has been enlarged to incorporate the cloak rooms. This was done in order to meet the requirements of elementary school teachers for space which might more readily adapt itself to complete laboratory purposes. Instead of cloak rooms, locker spaces are provided in the corridors. The complete built-in equipment of this room is listed in the accompanying table.

The Cincinnati plan, the White Plains plan and the New Rochelle plan represent the earnest purpose of meeting the insistent demands of the new elementary school curriculum. Further progress is possible in this field and should be encouraged.

"SCIENCE"

"THE DIG"

"MECHANICS"

PANELS, VON STEUBEN JUNIOR HIGH SCHOOL, CHICAGO
PAUL GERHARDT, ARCHITECT

THE DEVELOPMENT OF THE JUNIOR HIGH SCHOOL IN CHICAGO

By RALPH W. YARDLEY, Assistant Architect, Chicago Board of Education

The junior high school is a comparatively recent development in educational procedure. In the days of the Colonies there were no established standards or commonly accepted routines. The principal aim in education was to teach pupils to read or to give them a training in the three "R's." Colleges were provided for those studying for the ministry, but there was no uniformity or standardization of secondary education. It was not until Horace Mann went to Germany and studied the thoroughly organized Prussian system that any attempt was made to provide a uniform system of education in the United States. The many and voluminous writings of Horace Mann so thoroughly established the so-called "Eight and Four" system, comprising eight years of elementary school and four years of high school, that no attempt was made to develop anything new until 1913. The "Eight and Four" system contained a decided gap educationally. There was such a definite difference in the kind of teaching received in the elementary school from that of the high school as to create the feeling that the education of the High School was a separate training and possibly unnecessary. The objection to this system of study arose because of a change of economic conditions which created a demand for a broader education within a shorter period of time. In 1913, the National Education Association appointed a committee headed by Dr. William B. Owen, then President of the Chicago Normal College, for a report on the Reorganization of Secondary Education. This report was not presented until 1918 and its recommendation which forms the basis of the junior high school system is contained in a paragraph known as the Magna Charta of the junior high school movement, which is as follows:

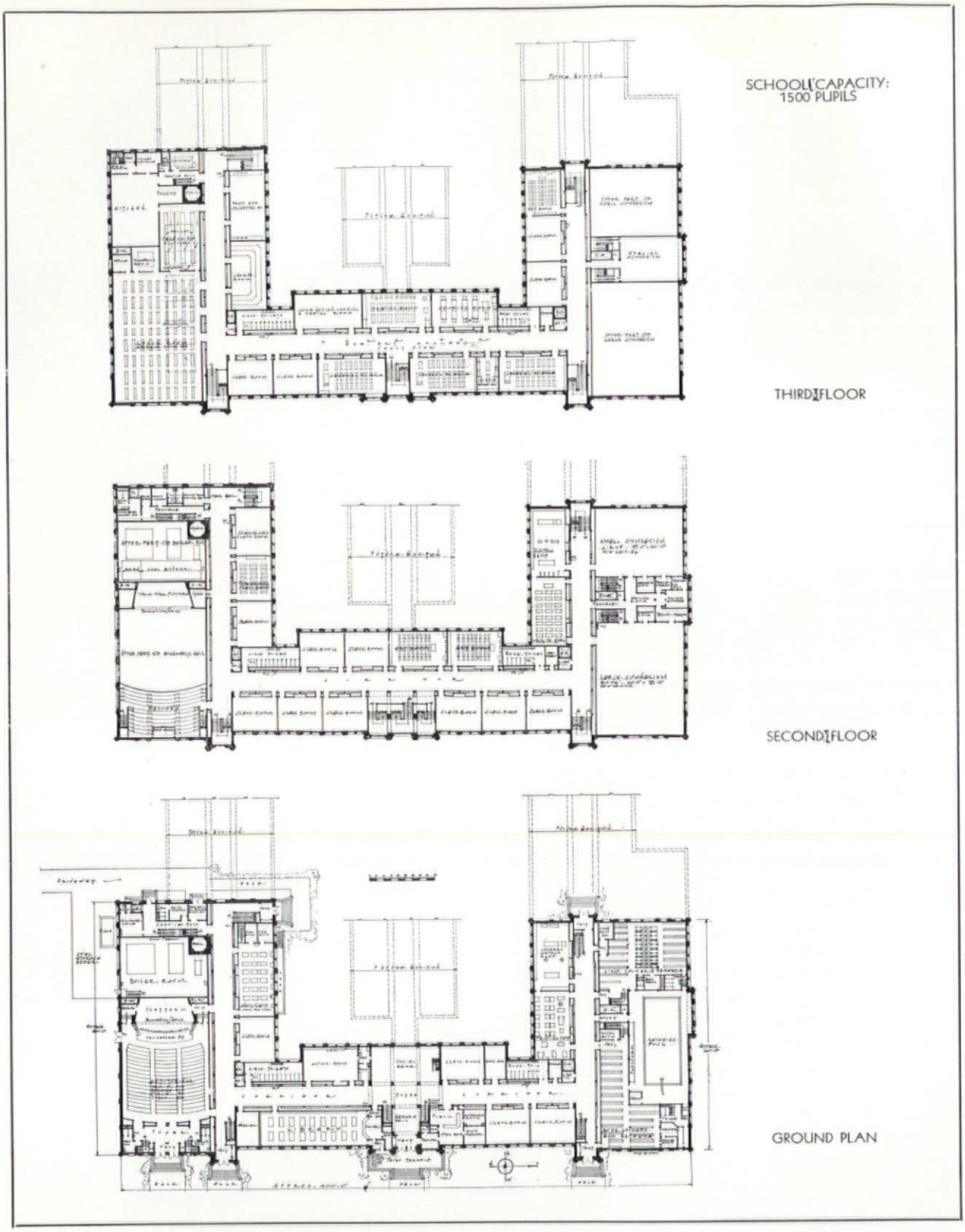
> "We, therefore, recommend a reorganization of the school system whereby the first six years shall be devoted to elementary education designed to meet the needs of pupils of approximately six to twelve years of age. The six years to be devoted to secondary education may well be divided into two periods which may be designated as the junior and the senior periods. In the junior period emphasis should be placed on the attempt to help the pupil explore his own aptitudes and to make at least provisional choice of the kinds of work to which he will devote himself. In the senior period emphasis should be given to training in the fields thus chosen."

Following the report of this committee, the junior high school scheme was tested in various parts of the country. Chicago was slow to adopt the recommendation although it was originally sponsored by a Chicago educator. In 1926, Chicago completed its first school building especially planned for junior high school work. This building was fairly satisfactory but was two stories in height, and there was an excessive amount of ground required in proportion to the number of pupils accommodated. It was apparent that this school was not as good for its purpose as could be provided, and before any other buildings were erected arrangements were made for an exhaustive study of building facilities in junior high schools which had been erected throughout the United States. This investigation was of the most thorough character and was carried on simultaneously by officials of the Educational Department of the Chicago Public Schools and the Architectural Department of the Chicago Board of Education.

Completion of these studies revealed that there were no definite standards established to date throughout the country in connection with the planning and designing of junior high schools as was the case in connection with elementary and senior high schools. This lack of definite standards and uniformity not only applied to building arrangements but even applied to matters in connection with room layout and equipment. The changing over of a system of educational procedure in a large city involves the construction of many new buildings, and in order to avoid mistakes it was decided to pay no attention to what had been done in the past in Chicago or elsewhere, and to work out plans which would be built around the course of study established for the junior high schools. This course of study had been tested over a sufficient period in old buildings which were being used for junior high school classes to establish the proper curricula.

PUPIL CAPACITY UNITS

The needs of a great city as to the number of pupils to be accommodated in buildings vary in different sections of the city. The junior high school course is the same in all sections of the city regardless of



TYPICAL PLANS FOR A JUNIOR HIGH SCHOOL
CHICAGO BOARD OF EDUCATION
PAUL GERHARDT, ARCHITECT

the number of pupils. A section of the city needing a small initial unit may develop into a densely congested residence district. It was, therefore, decided to develop plans for junior high schools which would be similar in all cases in their general arrangmeent of rooms and in the educational facilities which were provided, but which would be of such sizes as to accommodate units of 1500, 2000, 2500 and 3000 pupils. The latter size was to be the maximum in capacity and units of lesser pupil capacity were so planned that they could be enlarged to the maximum by building additions to the original building without any major alterations in the original building.

A series of plans were developed after a long period of research and study. A school of each type was built, and as soon as completed it was thoroughly inspected and checked architecturally and educationally down to the minutest detail for items needing corrections or improvements in future buildings. Such items were altered in the succeeding building, and checking and inspections of buildings completed within the last two years have shown practically no need for any change.

CURRICULUM DEMANDS

An elementary school pupil receives principally academic training with possibly a little manual training for boys and domestic science for girls. The seventh or eighth grade pupil who attends a standard junior high school has opportunities to study courses in general science, electrical shop work, printing shop work, general metals shop work, typewriting, stenography, and sometimes other similar special courses, depending on the location of the school. All junior high schools provide for instruction in advanced musical training and provisions for school bands, orchestral and glee clubs have to be provided. Training in library work is given under the supervision of a trained librarian. Swimming, special gymnasium work to remedy minor physical defects such as those of posture, and inter-school physical contests are provided. None of these has ever been provided in elementary schools and facilities have to be provided for them in the junior high school building. Provisions made for such activities will permit these activities to be a continuation of elementary school instruction instead of a separate type of training as was the case in connection with such activities in the senior high schools. The pupil or his parents have some choice in the course of study to be pursued during the junior high school period so as to fit the training to the special needs, aptitudes and interests of each individual instead of all pupils having to take one more or less fixed course of study. This provision for elective studies provides an additional difficulty in satisfactorily arranging the building for the most effective programming of the school.

PLANNING FOR DEPARTMENTALIZATION

The plans are developed to provide for the departmentalization of the school. This division results in the most efficient supervision of instruction in the various departments. The buildings are also designed so that they may, if desired, be used as social centers outside of school hours and so that they may be used whenever desired by the public. The auditorium may be shut off from the rest of the building and used for public gatherings even during school hours. The athletic section of the building is arranged in a unit so as to be available for community activities at times when school is not in session. The library is standard for all schools and is placed on the front of the building with a separate exterior entrance so that it may be used as a branch library and reading room of the city library system when not used by the school. It seats 120 persons. The administrative section of the building is placed close to the main entrance and adjacent to the section used for social activities in order to provide facilities for the Parent-Teachers Association and other civic groups interested in the school's welfare. Lunchrooms, which have a capacity of one third of the school membership, are placed in an upper floor of the building so that they may be skylighted and used for study rooms, and in order to permit the pupils having the utmost freedom during their lunch period without interfering with portions of the building used for instruction purposes. The room used for band and orchestral instruction is placed in a position in the building where the work does not annoy those working in other branches. This room and rooms used for musical instruction are separated from corridors by vestibules and have walls and ceilings treated with sound-absorbing materials.

CONSTRUCTION

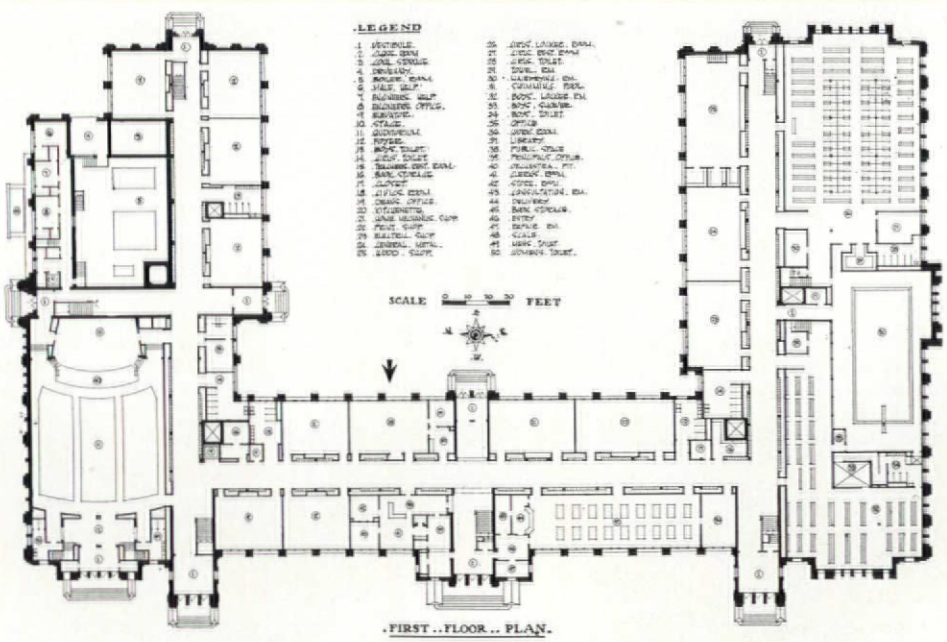
All standard junior high schools are three stories high and classified as "fireproof" under the severe requirements of the Chicago Building Code. Auditoriums in all junior high schools seat 800 to 900, being built for the ultimate maximum capacity of the school. The "large" gymnasium which is used by boys is 60 by 100 feet. Gymnasiums for girls are kept within a floor area not exceeding 3000 square feet, one gymnasium being provided in the smaller units and two in the larger ones. The natatorium is placed between the boys' and girl's locker- and shower-rooms in order to provide one swimming pool for the whole building. Swimming pools are 24 feet wide and 60 feet long in all the buildings and are equipped with filters and chlorine injectors. The walls of gymnasiums, locker- and shower-room, and natatorium, are of glazed brick and the ceilings in gymnasium and natatorium are treated with sound-absorbing materials. The floors

Chicago Architectural Photographing Co.

CIVICS ROOM

VON STEUBEN
JUNIOR HIGH
SCHOOL, CHICAGO

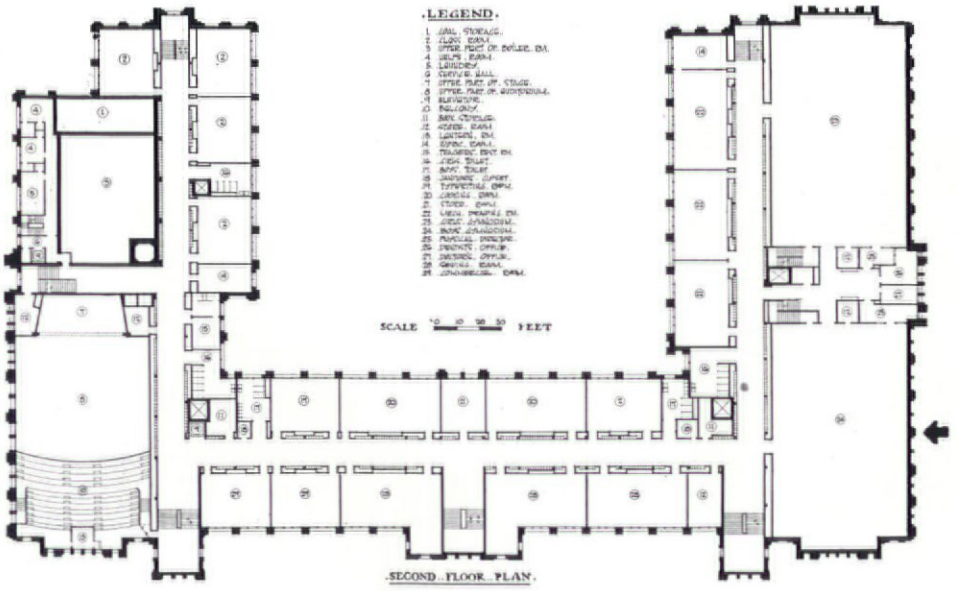
PAUL GERHARDT
ARCHITECT



FIRST FLOOR PLAN

Chicago Architectural Photographing Co.

BOYS' GYMNASIUM



VON STEUBEN JUNIOR HIGH SCHOOL, CHICAGO

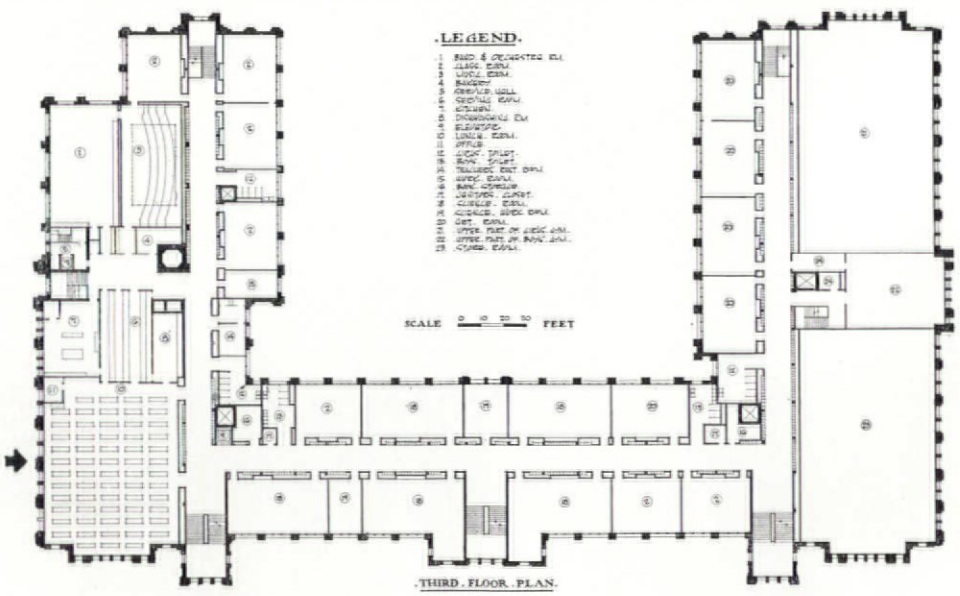
PAUL GERHARDT ARCHITECT

Chicago Architectural Photographing Co.

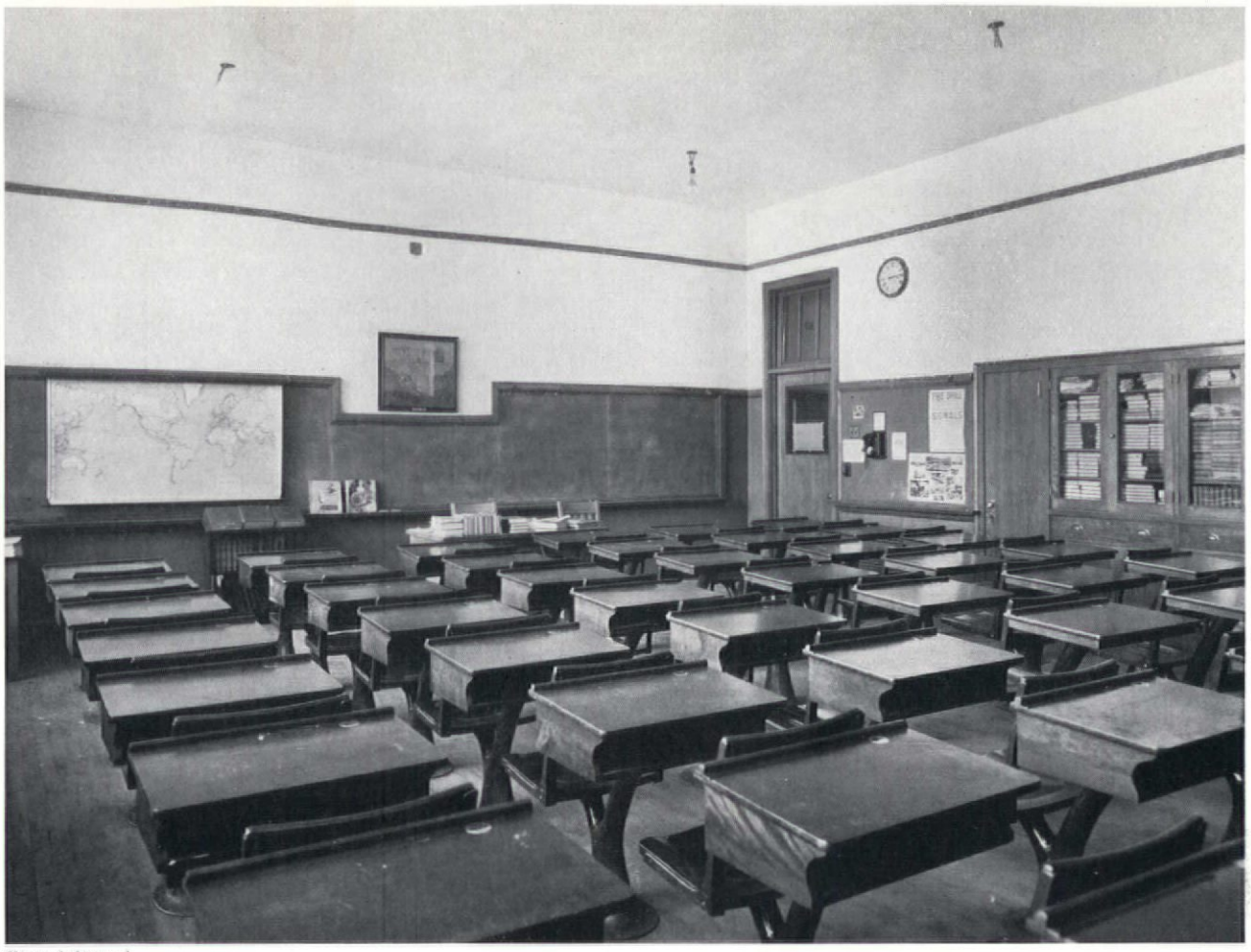
LUNCH ROOM

VON STEUBEN
JUNIOR HIGH
SCHOOL, CHICAGO

PAUL GERHARDT
ARCHITECT

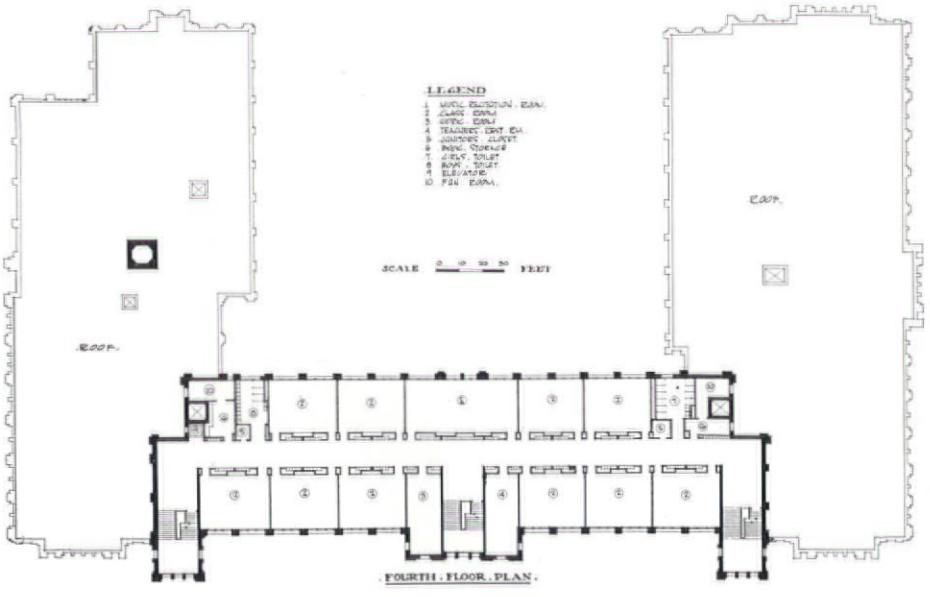


THIRD FLOOR PLAN



Chicago Architectural Photographing Co.

TYPICAL CLASS ROOM



VON STEUBEN
JUNIOR HIGH
SCHOOL, CHICAGO

PAUL GERHARDT
ARCHITECT

of the natatorium and locker-rooms are of non-slip tile. A medical suite containing offices and examination rooms is provided for the use of the school doctor, school dentist and school nurse. This suite is placed so as to be used in connection with the remedial gymnasium and is adjacent to the offices of the physical directors in charge of boys and girls. Art rooms and mechanical drawing rooms are placed to receive north light. All regular classrooms face either east or west so as to receive some sunshine during the day. Gymnasiums and natatoriums are placed at the south end of the building for the same reason. Buildings are heated and ventilated by a straight blast system providing an equal distribution of fresh washed warm air except that rooms used for band, orchestra or chorus, are equipped with special unit ventilation to prevent any possibility of noise being transferred to other parts of the building through ventilation ducts. Toilet rooms have glazed brick walls, tile floors and marble toilet stalls. Corridors are 14 feet wide and lead directly to a stair at each end. There are no dead ends to any corridors. All rooms have two exits. Recessed steel lockers in the corridor walls are used throughout. The walls of corridors between lockers are glazed brick from the top of the base to the top of the lockers. Base and border in corridors are of terrazzo and the field of the floor is of mastic tile.

The interior arrangement and equipment rooms in all junior high schools is the same, the variation in size being taken care of by the number of rooms provided for the various purposes for which the rooms are used. This standardization of facilities has been found to increase the efficiency of the instruction. The standardization of the junior high school stops with the arrangement of the building, the interior finish and the equipment. The exteriors of the schools vary, depending upon the neighborhood in which they may be placed, the size of the site and the character of their surroundings. It is necessary to place some buildings in proximity to business property, while some are placed in districts filled with tall apartment buildings, and others are in suburban territory surrounded by bungalows. The exterior design of the building in each case is designed to suit the particular location.

VON STEUBEN JUNIOR HIGH SCHOOL

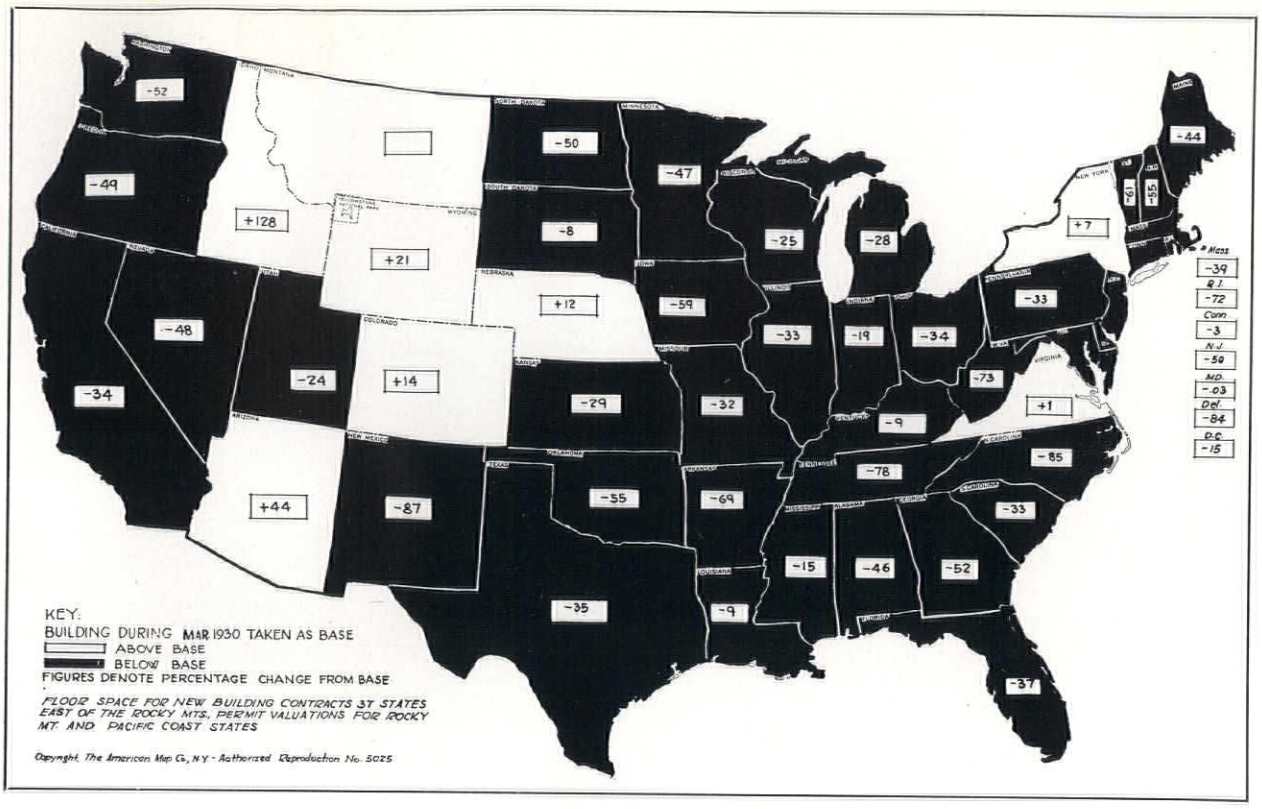
PAUL GERHARDT, Architect, Chicago Board of Education

The Von Steuben Junior High School varies slightly from the standard plan used for junior high schools of varying capacity in Chicago. A height of four stories was necessary because of the restricted area of the site and the need of providing a school with a capacity for 2500 pupils. The principal departure from the standard plan is in the shortening of the building and in the placing of the classrooms, thus eliminated, on the additional fourth floor of the building.

The site is irregular in shape and adjoins an attractive neighborhood park which is landscaped and which is provided with a field house. The north branch of the Chicago River winds past the school and the park at one end of the building, and the city streets have been rerouted around the building to permit the building and the park to form a minor community center which displays the building to the best advantage. The street in front of the building is practically a boulevard and the surroundings are tall apartment buildings.

The structure is built of varying shades of buff brick, ranging from tan to dark brown. Terra cotta trimmings have been used sparingly. The use of moldings, stereotyped ornament and conventional designs has been eliminated and sculptured terra cotta of architectural and educational significance has been used instead. Grotesques, masks and symbolical figures which have been used in the panels have either a general or special significance. All these are different.

The interior finish and equipment throughout are similar to that provided in all of the Chicago junior high schools.



The March building map showed only three states east of the Rocky Mountains where contracts on a floor space basis were larger than in March, 1930: New York, Virginia, and Nebraska. In addition five states in the Rocky Mountain district, based upon partial data showed March permit valuations above March of last year. From the standpoint of number of states to show improvement in contracts the March map was less favorable than the February map which showed six states east of the Rocky Mountains with floor space totals higher than in February 1930.

BUILDING TRENDS AND OUTLOOK

PROSPECTS FOR CONSTRUCTION OF SCHOOL BUILDINGS

By L. Seth Schnitman

The construction of new schools and colleges in 1930 accounted for almost 20 per cent of all non-residential undertakings. During that year schools and colleges were of greater importance to the construction industry than factories by almost 50 per cent. In fact, no single class of non-residential building except commercial buildings showed for 1930 as large a total as schools and colleges. Quite naturally then the construction trend of schools and colleges is of large significance to the architect.

With but few interruptions the trend of contracts on a valuation basis was downward from January, 1926, to early 1928, inclusive. During this period the curve depicting total construction of all types was about horizontal, with slight indications of an incline. This was the period when business generally was marking time in an advancing march.

During the latter part of 1928 new contracts for schools and colleges exhibited an upward trend but failed to attain the level from which they had fallen in 1926. At the same time construction of all kinds advanced to an all-time peak which culminated at the end of 1928.

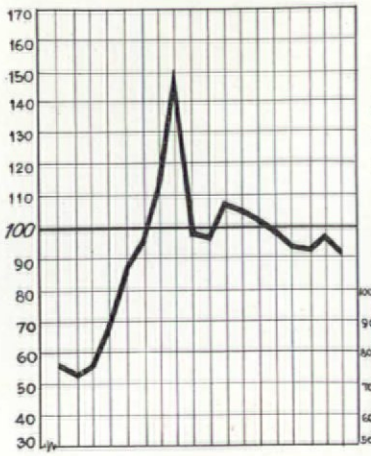
Schools and colleges too, showed a sympathetic decline at the end of 1928. This decline continued throughout 1929. But unlike the curve for general construction, schools and colleges showed a sidewise movement in 1930 while the toboggan in construction continued.

What is next for schools and colleges is difficult to say, but indications, judging from the first quarter record of contracts, are not too unpromising. Although the record for February and March pointed

(Continued on page 92, advertising section)

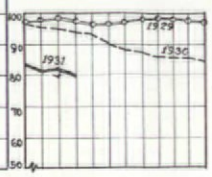
WHOLESALE PRICES FOR BUILDING MATERIALS

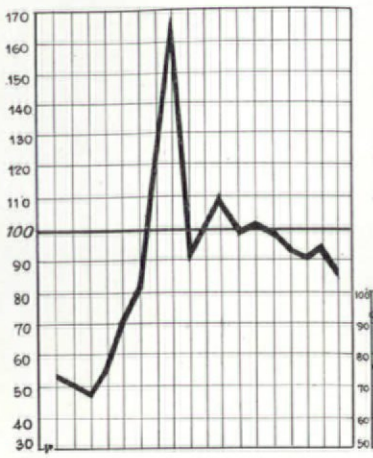
1926 Monthly Average = 100



GENERAL INDEX

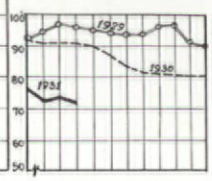
Prices (on partial data) showed a slight recession in April. The index was still substantially above the general level of other commodities at wholesale.

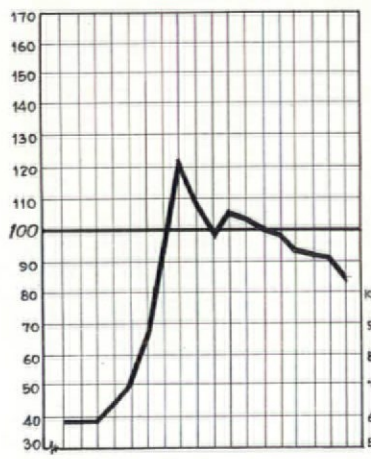




LUMBER

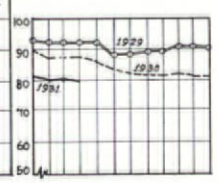
No present indications of any sustained recovery from present levels are apparent; prospects rather favor further declines.

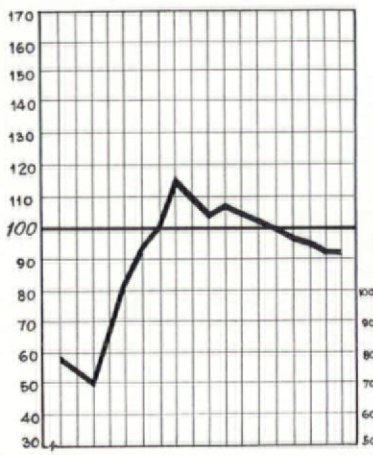




BRICK

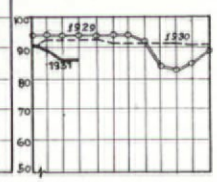
Brick prices have remained rather stable during the first quarter of 1931; though on a lower level than a year ago some further recession seems imminent.

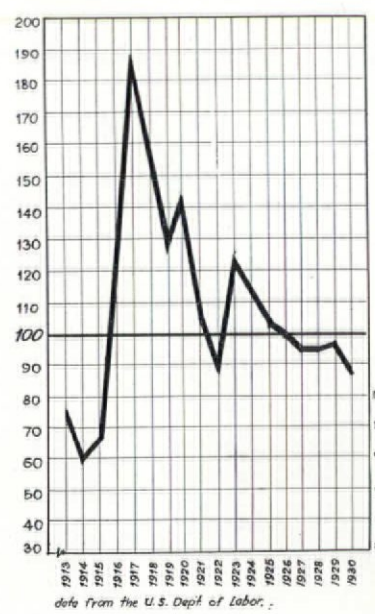




CEMENT

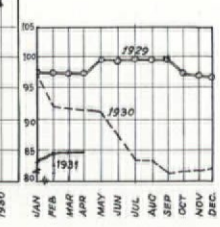
Despite large demand for highway construction lower building construction has operated to reduce prices. Further price recession will likely occur as year progresses.



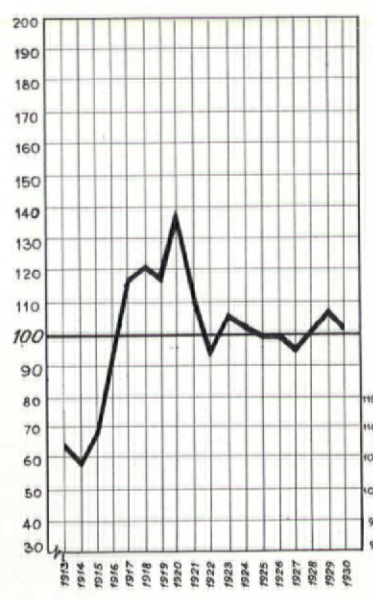


STRUCTURAL STEEL

Steel prices have yet to test present levels, with further large declines indicated for commercial and factory building. Present indications point to probable declines in steel prices.

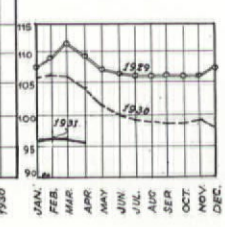


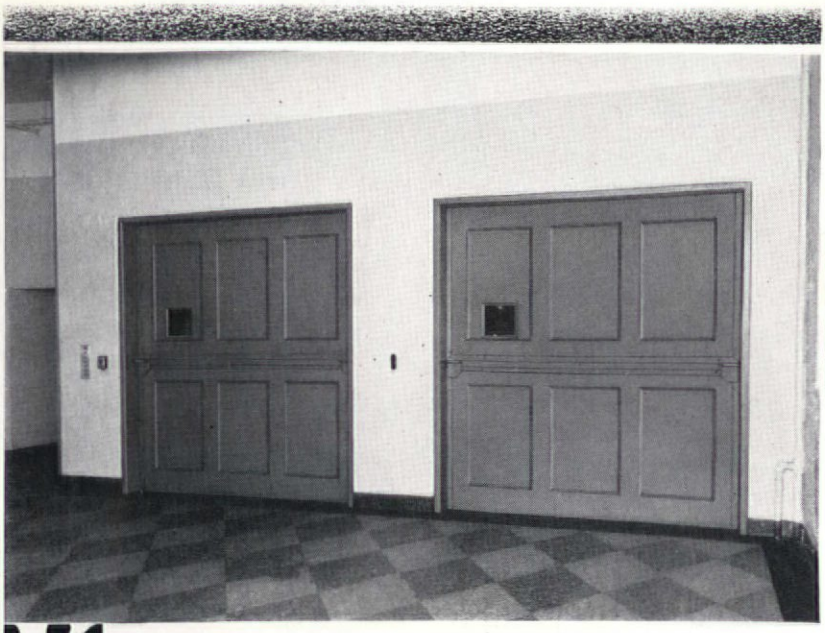
data from the U.S. Dept of Labor.



OTHER MATERIALS

The general trend of other building materials will probably be downward for next few months.





KNOWLEDGE - -

The Result of Investigation

Daniels and Fisher
Dept. Store Garage,
Denver, Colo.

Architects,
W. E. & A. A. Fisher

Elevator Contractor,
Otis Elevator Co.

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The Daniels & Fisher Department Store Garage, illustrated above is merely another instance where the choice of SECO Elevator Doors was based on careful point-by-point investigation and comparison. . . . Write today for complete catalog or have our nearest representative tell you all about them.

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SECURITY UNI-MOTORED FREIGHT ELEVATOR DOORS

Make good freight elevators more efficient

ARCHITECTS' ANNOUNCEMENTS and CALENDAR

C. Grant La Farge, Samuel Adams Clark, and Christopher La Farge announce the dissolution of the firm of La Farge, Warren and Clark. Samuel Adams Clark will continue the practice of architecture under his former firm's name of Warren and Clark at 136 East 57th Street, New York City. Jefferson M. Hamilton will be associated with him.

Luther Fentress, architect, has moved from San Marino to 238 South Hudson Avenue, Pasadena, California.

W. M. Brittelle has changed his address from 3522 Clifton Street, El Paso, Texas, to Sunshine Building, Albuquerque, New Mexico.

Virgil H. Fontaine, architectural engineer, has moved his office from 525 Citizens Building to 409 Norton Building, Louisville, Kentucky. Fred Erhart, architect, is an associate.

Jack C. Bergen has opened an architectural office in Room 22, Beers Building, 991 Broad Street, Bridgeport, Connecticut.

Geves George Kenny announces the removal of his architectural offices to 37 South Paint Street, Chillicothe, Ohio.

EUROPEAN HOUSING TOUR

A summer holiday tour has been arranged by the housing committee of the City Affairs Committee of New York in cooperation with the Garden Cities and Town Planning Association of London.

The tour will leave New York July 10. The itinerary includes London, the Shakespeare country, Manchester, Liverpool, Glasgow, Edinburgh, The Hague, Amsterdam, Cologne, Vienna, Lucerne, and Paris. The cruise will leave Havre August 22.

Arrangements have been made to study housing of all types in conjunction with general civic planning and development, health, parks, transportation, and decentralization. The party will be received by local authorities in each city and various enterprises will be visited under official guidance.

The tour is being organized on a straight cost basis and individual fares can be secured as low as $680. For further details, address Miss Helen Alfred, Chairman, City Affairs Committee of New York, 433 West 21st Street, New York City.

CHICAGO ARCHITECTURAL EXHIBITION

An exhibition of architecture and the allied arts will be held in the gallery of the Arts Club, 410 North Michigan Avenue, Chicago, from May 15 to June 6. The exhibition will be under the auspices of the Chicago Architectural Exhibition League, an organization controlled by a joint committee of nine architects representing the Chicago chapter of the American Institute of Architects, the Illinois Society of Architects and the Architectural Sketch Club of Chicago.

Drawings and small models of executed work, photographs, renderings, sculpture and allied arts crafts will be shown.

CALENDAR OF EVENTS AND COMPETITIONS

May 2	Exhibition of Modern Decoration and Design by members of AUDAC at Brooklyn Museum.
May 4-Aug. 8	Art Exhibition, Royal Academy, London (Burlington House).
May 9 Aug. 2	German Building Exhibition, in connection with International Town Planning and Housing Exhibition, Berlin.
May 15-June 6	Annual exhibition of the Chicago Architectural Exhibition League with the cooperation of the Arts Club of Chicago, Wrigley Building, Chicago.
Until May 29	Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).
May-August	Art Exhibition, Royal Scottish Academy, Edinburgh.
June 1-5	International Town Planning and Housing Federation Congress, Berlin.
June 10	Judgment of entries for Steel Bridge Competition. Address American Institute of Steel Construction, 200 Madison Ave., New York City.
July 5-Sept. 5	Summer course in Italian Architecture, Rome, Italy. Apply to Italian Tourist Information Office, 745 Fifth Avenue, New York City.
July 10-Aug. 30	Vacation-study tour of housing, arranged and directed by The Garden Cities and Town Planning Association, London, in cooperation with the City Affairs Committee, 112 East 19th Street, New York City. For information, address Helen Alfred, Housing Chairman.
October 1	Closing date for entries for Lincoln Arc Welding Prize competition. Address inquiries to the Lincoln Electric Company. Cleveland, Ohio.
November	Exposition of Indian Tribal Arts, Grand Central Art Galleries.
October-December	Art Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).
December 1	Closing date for entries in 1931 Better Homes in America Competition. Address c/o American Institute of Architects, 1741 New York Ave., Washington, D. C.

BUILDING EXHIBITION, BERLIN

Special problems of housing and town planning will be stressed at the German Building Exhibition, which will be held from May 9 to August 2 in Berlin. In conjunction there will be an Industrial Town Planning and Housing Exhibition.

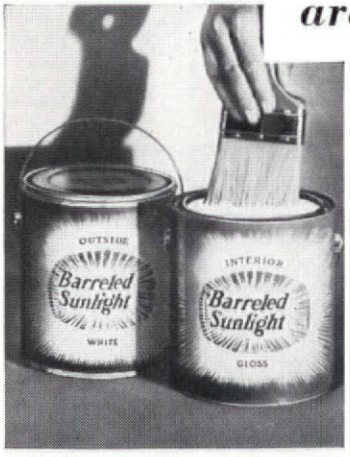
Some forty dwellings, full size, will be exhibited. They will illustrate typical sizes, public rooms, traffic rooms, sales rooms, all complete with interior furnishings.

Construction for agricultural needs, garages, new building methods and materials, will also be features of the exhibition.

THE NEW JERSEY BELL TELEPHONE COMPANY'S *building at Newark. The architects — Voorhees, Gmelin & Walker — specified Barreled Sunlight for interiors of this handsome building.*

Interiors *of the* New Jersey Bell Telephone Building

are painted for lasting beauty and cleanliness



BARRELED SUNLIGHT is now available in two forms, Interior and Outside. Write for complete information on Outside Barreled Sunlight—its more pronounced whiteness, richer lustre and marked durability. (Note that both forms of Barreled Sunlight are readily tinted any desired shade.)

PAINTED surfaces in the recently completed building of the New Jersey Bell Telephone Company at Newark, N. J., are distinguished by a finish of flawless smoothness, rich lustre and pronounced depth.

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Barreled Sunlight

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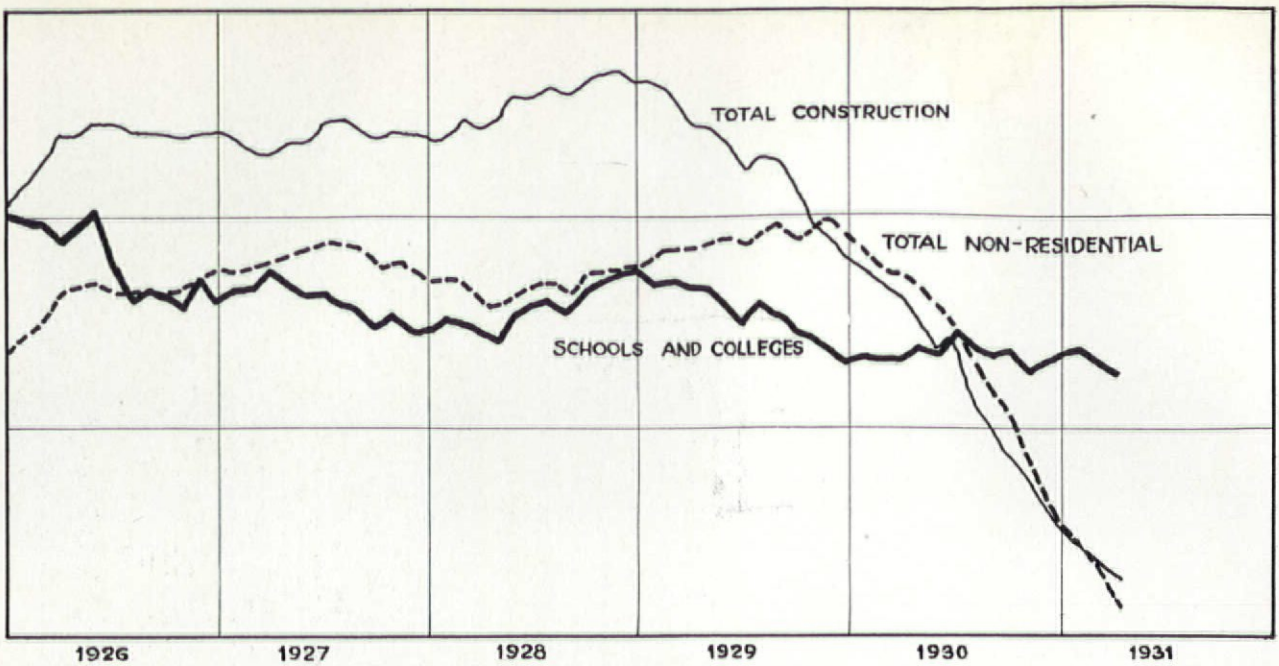


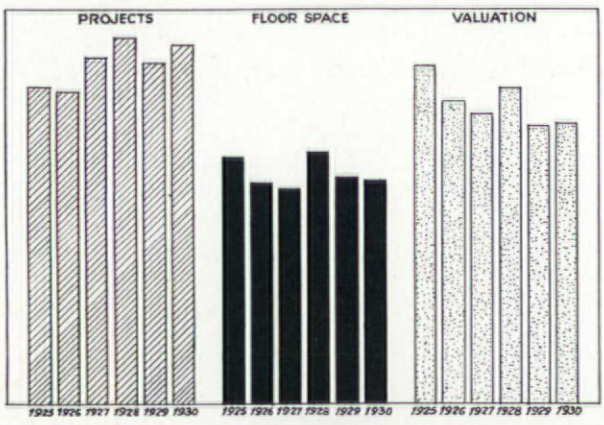
TREND OF BUILDING: SCHOOLS AND COLLEGES, 37 EASTERN STATES

A comparison with the trends in non-residential building and construction as a whole.

(*Continued from page 443, editorial section*)

downward, the decline is inconclusive. When contrasted with the trends of the curves for total construction and non-residential building, the showing is not particularly unfavorable.

Nevertheless it appears quite definitely that the valuation of new contracts for schools and colleges to be placed during the remaining months of the year will fall below the totals for the corresponding months of last year. This is reasonable because the stimulus of new educational work for which contracts were placed during 1930 to alleviate the unemployment problem has apparently spent itself largely.



Trend of Building: Schools and Colleges, 37 Eastern States

A comparison between number of projects, floor space, and valuation.

The deep depression in business has made increasingly difficult the obtaining of moneys for new private college buildings. It is likely that the latter months of the year may reflect this condition. In spite of this, it is almost certain that new school and college building will fare much better in 1931 than commercial or factory building, for which further large losses are definitely indicated.

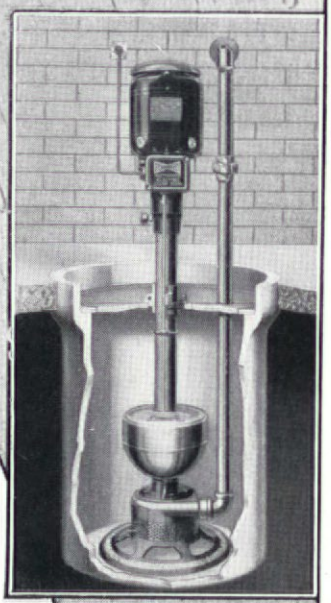
It is of interest to note that 1928 was the year which showed the largest number of school and college projects. From this standpoint 1930 was second only to 1928 of all the years since 1924.

From a floor space basis 1928 likewise was the banner year. The year 1930, however, was in this case of less importance than 1925 or 1928 and only slightly exceeded 1926. Where, on a project basis, 1930 was higher than 1929, from the standpoint of new floor space 1930 was somewhat under 1929.

From the standpoint of valuation, contracts for new schools and colleges were at their peak in 1925. Though on this basis 1930 was higher than 1929, it was lower than any other year since 1924.

In view of these facts it is quite probable that for 1931 the number of projects may exceed those for 1930, but it is doubtful whether either floor space or valuation can show gains over last year.

when it RAINS and RAINS and RAINS



Penberthy Automatic Electric Sump Pump

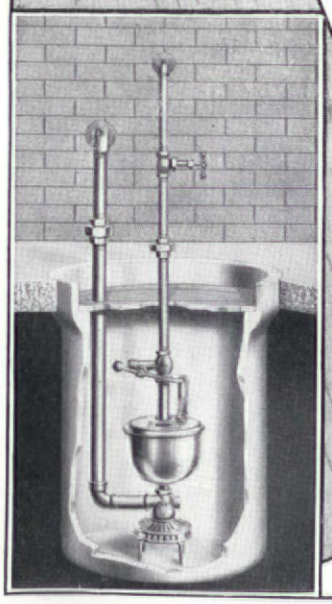
A Dry Basement

ALTHOUGH this home was built in a new subdivision that is without sewerage facilities, its owner will never be troubled with a wet basement, no matter how hard or how long it rains. The architect had it equipped with a Penberthy Pump that handles all basement seepage and drainage quickly and quietly.

Both the electric and water operated pumps are immune to corrosion . . . they are copper and bronze throughout. Both are automatic and thoroughly dependable under the most severe operating conditions; they are economical of electricity and water power. Both have a minimum space requirement and are easy to install.

Penberthy Pumps are quickly available from the stocks of leading jobbers throughout the country.

Penberthy Automatic Cellar Drainer (Water Operated)



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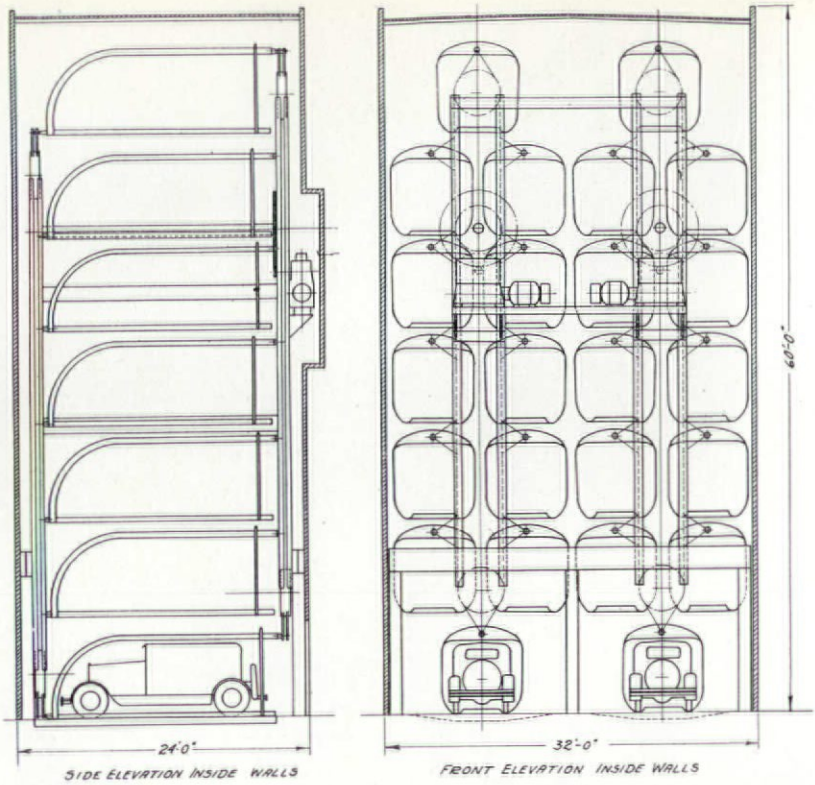
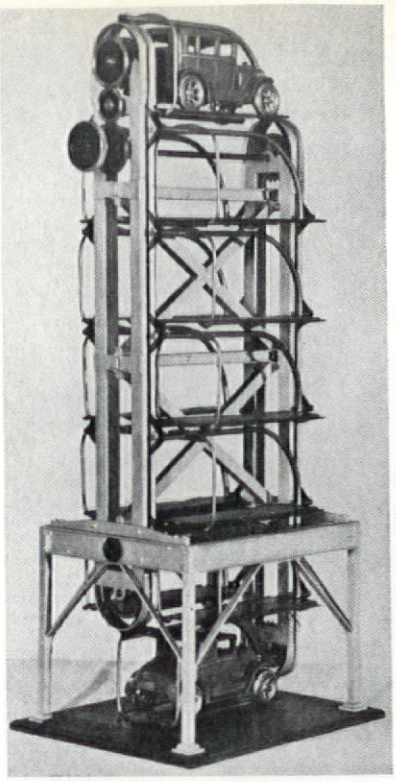
PREVENT FLOODED BASEMENTS

PENBERTHY PRODUCTS





Detail drawings and model of vertical parking machine developed by the Westinghouse Electric and Manufacturing Company. Each machine has spaces for twelve automobiles 18 feet long. Additional spaces can be added in pairs.

NEWS IN BRIEF

VERTICAL PARKING MACHINE

An automatic parking machine, which allows the parking of twenty-four automobiles on a ground space little larger than that required by an ordinary double garage, has been developed by H. D. James, consulting engineer of the Westinghouse Electric and Manufacturing Company.

This machine consists of cradles, one for each car, supported between two endless chains which pass over sprocket wheels at the top and the bottom of travel; the chains are driven by two electric motors, and, by means of a push-button control (or its equivalent), any cradle can be brought quickly to the driveway level for receiving or discharging an automobile.

Three general methods, all of which use substantially the same control but different master switches, are used for operating the parking machine.

First is the key system, best suited for garages where spaces are rented for a fixed time, say for a month. Outside the garage is a panel having several numbered locks, one for each parking space, and a lock for opening and closing the door. Each tenant is provided with a key, which, when inserted in the lock for his particular space, and turned at right angles, dispatches that cradle to the driveway, and permits the tenant's taking his key from that lock and inserting it in the door lock. When the key inserted in the door lock is turned ninety degrees, or sideways, it establishes a circuit to automatically open the door as soon as the cage is level with the driveway. While the driver is engaged in driving his car "on" or "off," the key remains in the door lock preventing anyone else from operating the machine while the driver is inside the enclosure. When the automobile has been driven "on" or "off" and the tenant is ready to leave, the key is turned to the vertical position in order to remove it from the lock. This, by establishing another circuit, closes the doors, leaving the machine ready for use by the next tenant.

Another method of operating the parking machine is by push-button control, a method especially suitable for use in a public garage where the push-button can be located in the cashier's office.

The third method, the coin system, is the same as the push-button system except that a coin machine is used instead of push-buttons. The driver deposits a coin which opens the door and provides a space for parking his car. As in the push-button method, he takes a check which enables him to call his cage to the driveway level when he wishes his car. If he over-stays his time (should there be a time limit), he automatically is locked out, and, to get his car, is required to deposit additional money.

IT HANGS TOGETHER

Here you see one of the reasons why Brixment mortar cuts bricklaying costs—*the mortar hangs together.* . . It doesn't break off and fall to the ground before the joint is struck. As a result, no mortar is wasted and the bricklayer stoops less often to the mortar board. It doesn't slop down over the face of the wall. So less time is required to clean down the finished job. . . This is due to the fact that the plasticity of Brixment mortar does not depend upon the use of excessive water. . . *The mortar hangs together.*

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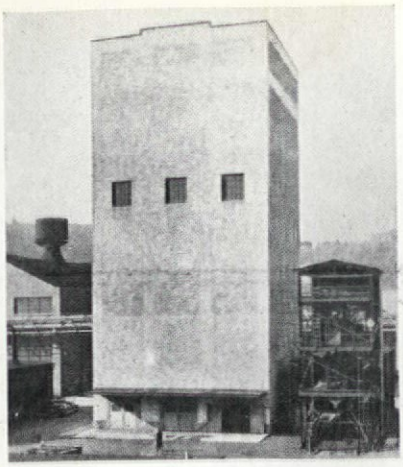


Parking machine built at East Pittsburgh Works of Westinghouse Electric and Manufacturing Company.

The present design of the machine operates at a chain speed of 100 feet per minute, so that the average time for bringing a cage to the driveway level is thirty seconds. When a cage is called to the driveway level, the machine automatically selects the shortest route.

Each machine of twenty-four parking spaces is 105 feet high and occupies a ground area of 16 feet by 24 feet for an automobile 18 feet long. Where several machines are installed most of them can be made for shorter automobiles, thus reducing the required ground area and the first cost. When desired, a less or greater number than twenty-four cradles may be used; for each pair of cradles omitted or added the structure is changed eight feet in height. The machine may be arranged for loading and unloading at either the bottom or the top of the loop.

"HOW TO JUDGE A HOUSE"

A light, readable book of 84 pages, fully illustrated, entitled "How to Judge a House," has just been issued by the National Committee on Wood Utilization of the Department of Commerce.

The purpose of the book is to furnish the prospective home buyer with basic information about site, design, construction, and equipment needed to make a wise and economical choice of the house already built. It tells how to judge the quality of building materials and construction methods upon which the security of the buyer's investment largely depends.

N. Max Dunning of Chicago, Fellow of the American Institute of Architects, is chairman of a special subcommittee composed of other prominent architects and representatives of the leading realtors', contractors', builders', and consumers' organizations of the country, under whose guidance the book was written. Nelson S. Perkins, construction engineer of the National Committee on Wood Utilization, is the author.

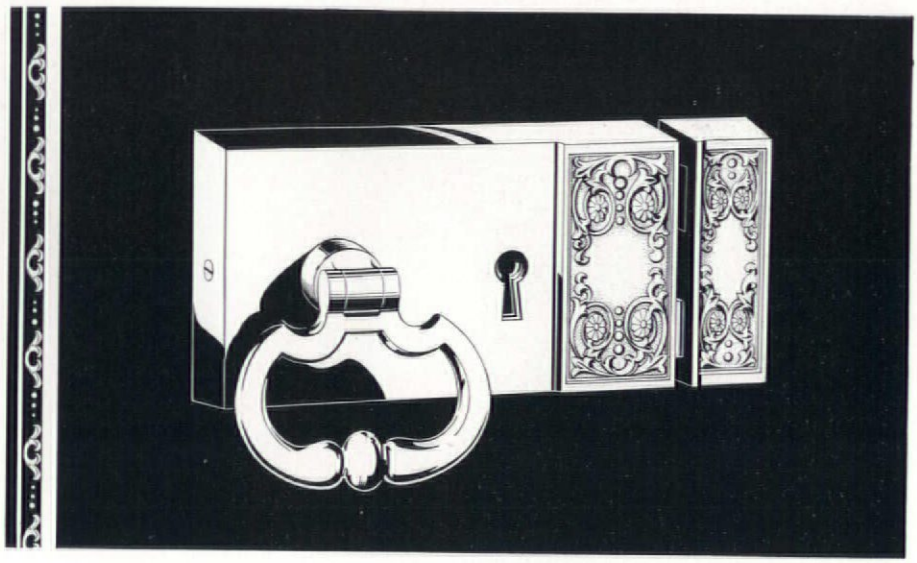
The new book may be obtained from the Superintendent of Documents, Goverment Printing Office, Washington, D. C., or from the district offices of the Department of Commerce in leading cities. It sells for 10 cents a single copy, $7 a hundred or $50 a thousand.

OKLAHOMA ARCHITECTS

A banquet and ball were given at the Huckins Hotel, Oklahoma City, April 27, by the Oklahoma State Association of Licensed Architects. A business session preceded the festivities.

EXCLUSIVE DESIGNS BY

RUSSWIN



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The Architects were Taylor & Fisher, and Smith & May, the Engineer was Herman F. Doeleman, and the General Contractor J. Henry Miller, Inc.

For complete information about Hunt inspection, tests and supervision for buildings and structures see Sweet's Architectural Catalogues A-119 or write us.

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AUDAC EXHIBITION

The Brooklyn Museum announces an exhibition of modern decoration and design by members of the American Union of Decorative Artists and Craftsmen, commonly known as AUDAC. The exhibition, which opens May 3, will include house and other furnishings, textiles, typography and book design and various examples of applied art.

This is the first large general exhibition of the society. Among the exhibitors will be Frank Lloyd Wright, Rockwell Kent, Lee Simonson, Joseph Urban, Paul T. Frankl, Gustave Breuhl and Gustave Jensen.

One of the important features of the show will be complete interior furnishings for a modern cottage, designed by Kem Weber of Hollywood, California, for the investor of moderate means. Mr. Weber's exhibition will show new methods of furniture construction. Donald Deskey will exhibit a guest room; Wolfgang and Pola Hoffmann an office; Alexander Kachinsky a reception office; Willis Harrison a bedroom; Gilbert Rohde a room.

SOME FACTS ABOUT SKYSCRAPERS

From the March 1931 issue of *Housing:*

The average European, who has heard so much about New York's skyscrapers, is led to believe that America is a country of skyscrapers and that these manifestations of the present day flourish throughout our entire land.

It will be of interest, therefore, at least to European students of American affairs to learn that in the whole nation there are but 377 skyscrapers or buildings exceeding 20 stories in height and 4,778 such buildings over 10 stories high—of which more than one-half are in the city of New York.

A survey of high buildings was made a few months ago by one of the leading builders of such structures. This survey covered 173 cities throughout the country—all those containing 50,000 population or more. For purposes of this study a skyscraper was defined as one 10 or more stories in height. It was found that there were 4,778 such buildings located in 131 different cities. Of these 131 cities, however, there were 59 that had but 5 buildings of this height, and out of all the cities of 50,000 population there were as many as 42 that had no buildings reaching the height of 10 stories.

Slightly more than one half the total number of skyscrapers in the country, 10 stories or more in height, are to be found in New York—2,479 out of a total of 4,778. In 6 cities, there are more than 100 buildings of this height. In addition to New York, Chicago leads with 449, Los Angeles follows with 135, Detroit with 121, Philadelphia with 120, and Boston with its narrow streets with 104.

Thirty-six different cities have one or more buildings over 20 stories in height. Of these New York has 188 such buildings, Chicago has 65, Philadelphia 22. There are 10 buildings in the country over 500 feet in height, and 5 others in course of construction.

The highest existing building at the time this survey was made, was the Woolworth Building,

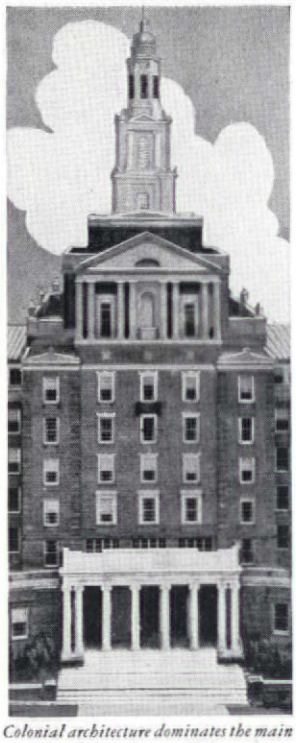
AETNA LIFE
INSURANCE BUILDING
Hartford, Connecticut

Architects: James Gamble Rogers. *Heating and Ventilating Engineer:* Meyer, Strong & Jones, Inc., *General Contractor:* Geo. A. Fuller Co., *Heating Contractor:* Gillis & Geoghegan.

Planned for Generations to come

Founded, as every insurance company is, on the idea of providing for the future, the great Aetna Life and affiliated companies have given a noble embodiment to this idea in the building which is henceforth to be their home. With all that is most modern and most practical, the building has a very evident character of the institutional, the monumental, and the permanent.

Quite suitably, and recognizing, no doubt, that what has no past is "pretty sure of having no future", the designers have harked back to early traditions in this country. The result is a fine example of the American Colonial style, said to be the largest building of that style in existence, for any purpose.



Colonial architecture dominates the main entrance of Aetna's beautiful new home.

The choice of NATIONAL Pipe for a major use in so fine a project, so conceived and so designed, adds to the long record of testimony as to the character of—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY

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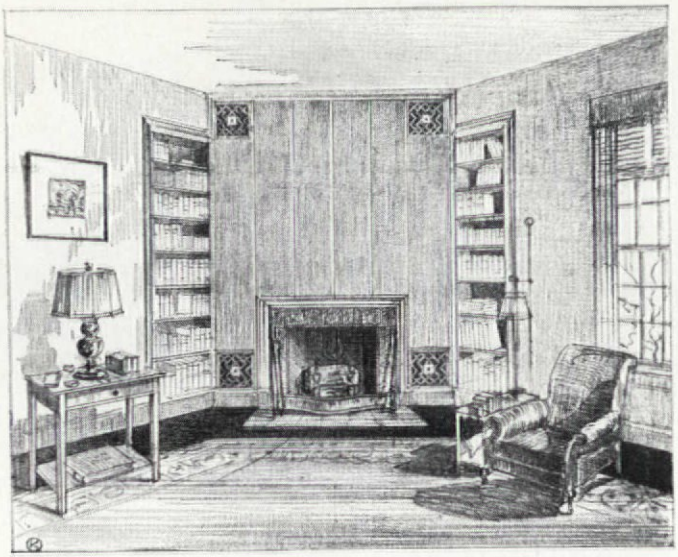
NATIONAL PIPE

A Heatilator Fireplace



By FRANCIS KEALLY

Member, A. I. A., lecturer at the School of Architecture, New York University. One of a series by prominent American architects.

Mr. Keally says:

"In architecture, embellishments should express architectural functions—beautifully and honestly. The Heatilator grilles in the wall above and below the fireplace should be accepted by the architect as part of his job in design. As I see it, these units should be arranged and designed in such a way as to enhance the entire architectural composition around the fireplace. This I have tried to do in the accompanying sketch, which illustrates a fireplace in the corner of a small den.

"The fireplace always has been and always will be, I hope, the key-note in any room. It is the focal point toward which the family and their friends are attracted. To me, it is the most enchanting feature of a room, and not only should be made useful but romantic and charming. The Heatilator Company has contributed a basic means of improvement in fireplace construction which I believe is worthy of consideration by any prospective builder."

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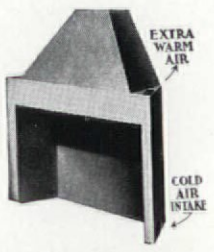
The use of a Heatilator rarely adds more than $15-$25 to the cost of an ordinary fireplace—and it absolutely assures proper construction, good draft, freedom from smoke, and double heat from same fuel. Extensively advertised in national magazines, Heatilator fireplaces are looked for by people who buy or rent. To be strictly down to date, every house and apartment needs Heatilator-fireplace construction. Catalogued in Sweets. Full particulars on request. The Heatilator Company, 615 East Brighton Avenue, Syracuse, N. Y.



Heatilator
Fireplace Unit

whose 792 feet in height had not been surpassed in 16 years. Since then, however, the Chrysler Building has been completed, which reaches a height of 808 feet above the sidewalk, and the new Bank of Manhattan Building in Wall Street which mounts to a height of 836 feet—all of these to be out-topped by the new Empire State Building, now nearing completion, which rises to the height of 1100 feet.

From the point of view of the resident New Yorker it is interesting to learn that 50% of the buildings in that city from 10 to 20 stories in height—and 60% of those exceeding 20 stories in height—are located in the mid-town section between 14th and 59th street, far up-town from the financial district on the tip of Manhattan Island.

LE BRUN FELLOWSHIP AWARD

For the best design of a working boys' club, Bruno John Basil of Brooklyn has been awarded the Le Brun Traveling Scholarship for 1931. The award was made by the New York Chapter of the American Institute of Architects.

Mr. Basil, a graduate of Yale University, is employed in the office of Cass Gilbert.

First honorable mention went to Carl Bertel Lund, New York; second to Ralph Aubrey Jeffers, Elkton, Md.; third to Simon Breines, Brooklyn, and fourth to George Daub, Forest Hills, L. I.

The winner will study architecture in Europe. The scholarship, intended to supplement school and office experience, has a stipend of $1,400.

ROBERT D. KOHN'S ADDRESS AT THE A. I. A. CONVENTION

Creation of "a new kind of functional democracy within, and eventually outside, the building world of America" was foreseen by Robert D. Kohn of New York, president of the American Institute of Architects, in his address opening the Institute's sixty-fourth convention in San Antonio, Texas, on April 14.

The right of the architects of America to be directors of the building process can only be based on actual leadership of this democracy, already in the making, Mr. Kohn declared.

"We must," Mr. Kohn asserted, "make the architect capable of using the light gained through study of his more intimate problems to give him insight into the ways in which all of industry must eventually be changed if we are to move toward a better economic and political organization in the future."

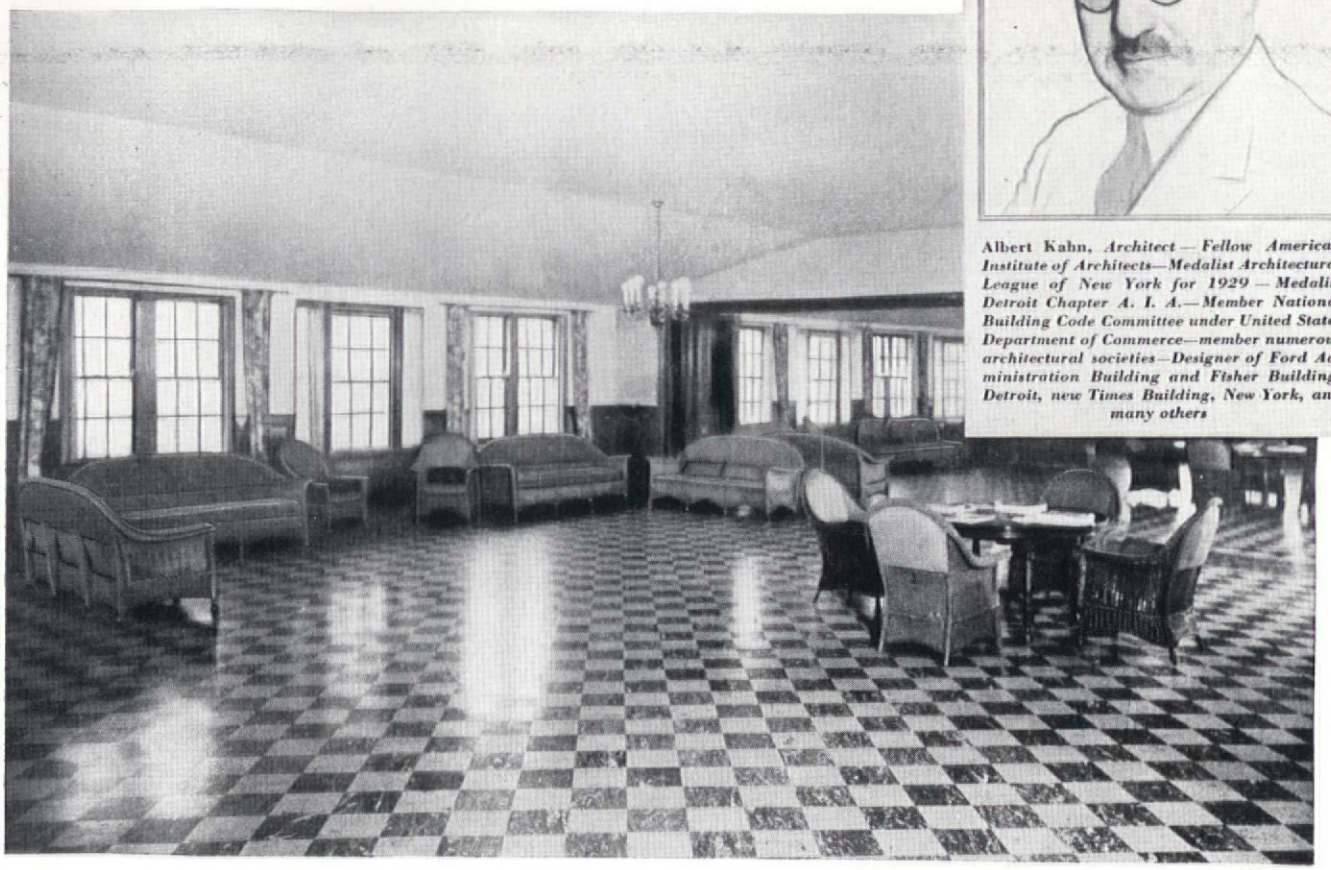
Artists, Mr. Kohn warned, must cease being rampant individualists, and must recognize themselves as part of a guild devoted to an art which can only be advanced as the whole group of its workers advances.

"A change has come over our social point of view," he continued. "Once architects were individualists. We avoided too close a contact with the common herd of workers, the builders and workmen and manufacturers. We were artists who must keep aloof from the world.

"Rubber Flooring has definitely established itself as an invaluable material in modern building. It serves admirably for many purposes and lends itself to architectural treatment with excellent results."

ALBERT KAHN—*Architect*

Albert Kahn, *Architect — Fellow American Institute of Architects—Medalist Architectural League of New York for 1929 — Medalist Detroit Chapter A. I. A.— Member National Building Code Committee under United States Department of Commerce—member numerous architectural societies—Designer of Ford Administration Building and Fisher Building, Detroit, new Times Building, New York, and many others*



Social Hall, Ford Administration Building, Detroit, Michigan, showing Goodyear Rubber Flooring

"*Rubber Flooring*—invaluable in modern building"

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Now Goodyear Rubber Flooring is a material so ready for beauty in floor design that architects apply it in all types of buildings. There are no limits to the patterns you may make with Goodyear Rubber Flooring. A full range of attractive colors and textures invites your skill. There are moderate tones and tones brilliant and crisp. Whatever your need in color, Rubber Flooring supplies it; yet always with the cleanliness, permanence, and thrift requisite to practical modern building.

Have you full information on this helpful flooring? Write for Goodyear's booklet—A.I.A. File 23C—containing color plates of whole floor designs and complete installation data. Samples gladly furnished on request. Address, Goodyear, Akron, Ohio, or Los Angeles, California.

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Adjustable Ball Hinges
Butts, Pivots and Bolts
Door Stays and Holders

"Now we know better. Not only the esthetic and the technical contacts are to be fostered, and in a new way, but above all other things we know now that we need to understand the relations of architects as a group with the larger world of things. We must ask ourselves what is the place of the architect as a citizen in this changing world by reason of his being an architect."

A plan of adult education reaching the whole body of the architectural profession has been worked out by the Institute, Mr. Kohn reported, but its progress has been halted by the hard times. Through traveling lectureships, the Institute aims to make available to the members of its 66 chapters throughout the country the knowledge acquired by those who have had wider opportunities along special lines of practice.

A chief aim of the Institute is the improvement of government architecture, Mr. Kohn pointed out. This, he said, can be accomplished because of the superiority of American architects.

"If the Treasury Department," he explained, "could produce better built and better looking buildings with its staff of hundreds of Civil Service draftsmen than can the architects of the country in their private practice, then the Treasury Department should be left to its traditional policy.

"But we know that we can produce better work than they do. It is done currently in private practice all over the country."

THOMAS JEFFERSON

Jay E. House writes in the *New York Evening Post* about a famous architect:

"Jefferson was a manysided man. He was a fine architect and, in addition to his own, planned many of the beautiful homes in the Charlottesville vicinity. He played the violin divinely, and his head was full of curious notions. In the ladies' parlor in his home is the first parquetry floor ever laid. Jefferson thought it up. He invented the first dumb-waiter, which was designed to bring two bottles of wine from his cellar and return two empties with one motion. He thought up a weather vane for indicating the direction of the wind. It is fixed in the ceiling of his front porch and still works. He invented a calendar showing the day of the week, worked by weights attached to a clock. His home is full of original gimcracks of his own designing."

THEATERS

The conventional theater of today soon will be obsolete and balconies will be abolished, according to S. L. Rothafel ("Roxy") owner of The Roxy Theater, in an article in the *New York Herald Tribune*:

"I believe that new theaters will abolish balconies because balconies tend to divide audiences. Under the new plan orchestra floors will be saucer-like but irregular, resembling a kidney—narrow at the front and wide at the rear. The bank of the floor may run to the ceiling, but every seat will face the screen."

THE ARCHITECTURAL RECORD

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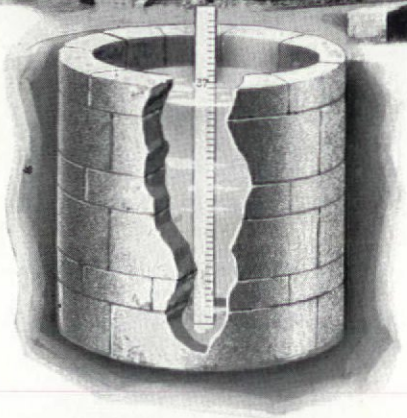
New Administration Building, Wellesley College, Wellesley, Mass. Harold Z. Klauder, Architect. L. B. Willcutt & Sons Company, Contractors. Truscon Waterproofing Paste used in all cement mortar for face brick to overcome dampness penetrating interior walls.



This specially constructed well was 37" deep by 22" wide. Its walls were an exact replica of the intended walls of the college building. The test conducted through means of this well proved conclusively the efficiency of Truscon Waterproofing protection.

An Interesting Test
A Logical Decision

The penetration of moisture through brick walls has been a definite problem for Wellesley College authorities. In the construction of the new Administration Building it was decided, if possible, to solve this problem for once and all. A well was constructed with walls the exact replica of the intended walls of the college building. All cement mortar used for the face brick was integrally waterproofed with Truscon Waterproofing Paste Concentrated. This well was filled with water, covered, and allowed to stand for 100 hours. At the end of that time the water depth was measured. It remained exactly the same as when the water was first poured in, proving the complete impermeability of cement mortar waterproofed with Truscon Waterproofing Paste. As a result of this test Truscon Waterproofing Paste was used for all cement mortar in this building.

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DECORATIVE PANELS
BY NATACHA CARLU

MONTREAL STORE
OF T. EATON & CO.

THE ARCHITECTURAL RECORD

AN ILLUSTRATED MONTHLY MAGAZINE
OF ARCHITECTURE

VOLUME 69 JUNE · 1931 NUMBER 6

THE T. EATON & CO. DEPARTMENT STORES IN TORONTO AND MONTREAL

By JACQUES CARLU, Architect of the Interiors

The new Toronto store and the addition to the Montreal department store of T. Eaton and Company, an organization with nearly 50,000 employees, were designed by the Canadian architects, Ross and Macdonald. The interior architectural treatment was entrusted to myself, and the mural decorations to my collaborator, Natacha Carlu.

THE MONTREAL STORE

The ninth floor of this store is given over to public use. The architectural program called for a restaurant serving 700 persons. Private dining rooms, foyer, lobbies and the like were included.

Elevator lobbies: As a transition between the selling floors and the new public rooms, the ninth floor elevator lobbies have been treated as long arcades. Display windows, inserted in Monel metal and framed in French marble, give a commercial touch to this space and remind the visitor that he still is within the walls of a department store.

The long cove with indirect lighting in the ceiling, the floor design, as well as the horizontal bands of gray and pink *Fabrikoid* used on the walls, lead the visitor from the elevator lobbies to the main foyer.

Foyer: From here a beautiful view over a large area of the city can be enjoyed. The entire outside wall has been treated to give as much window space as possible. Sunlight pours in, creating a cheerful atmosphere.

The foyer will occasionally be used as a tea room or lounge. The furnishings have been planned to answer these various purposes. Chairs, armchairs and couches are all of very simple design. The color scheme of the upholstery—mouse gray, black and pink—harmonizes with the black satinwood of the frame.

The tea tables have clear glass tops resting on blades of Monel metal. A central table of large dimensions is supported by two legs of glass in which light has been so placed as to illuminate vases of Austrian glass.

The draperies are made of *chenille* with horizontal bands of beige, pink and soft green. They are framed by curtain boxes of Monel metal.

A wide niche ornamented with vertical mirrors connects the foyer with the main dining room through doors of Monel metal, satin finished.

Restaurant: The central nave presents a clerestory ringed with horizontal windows

Main dining room with platform for fashion shows. Railings of Monel metal. Steps of black Belgian marble. Walls covered with horizontally-striped French fabric, beige and pink. Mural by Natacha Carlu.

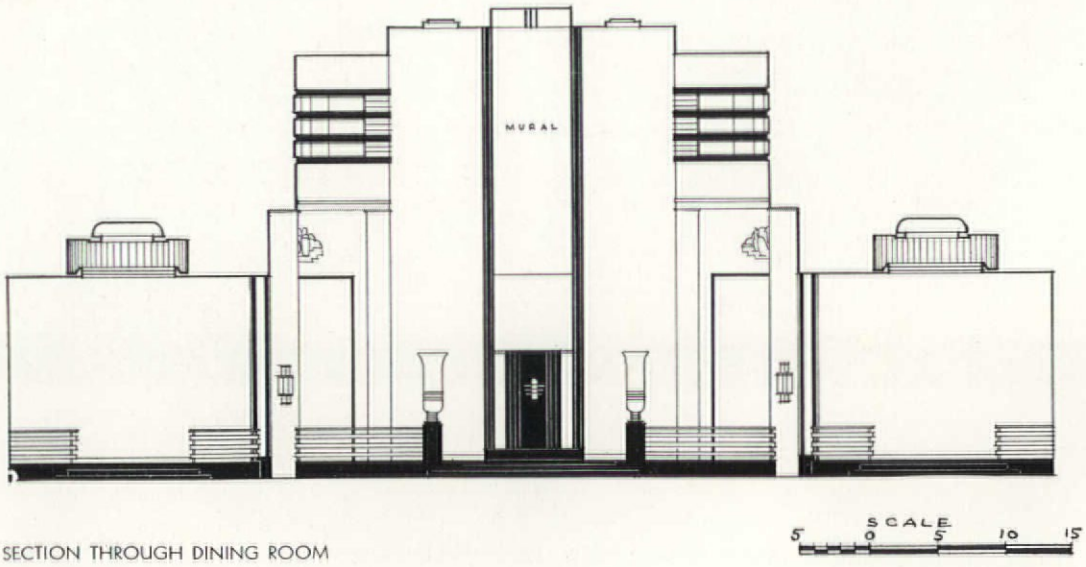
MONTREAL STORE OF T. EATON & CO.
JACQUES CARLU, ARCHITECT OF INTERIOR

Brigdens Ltd.

Main dining room. Horizontal windows in clerestory admit natural and artificial light through panels of opal glass. Columns of pink and gray marble. Floor of Ruboleum tiles.

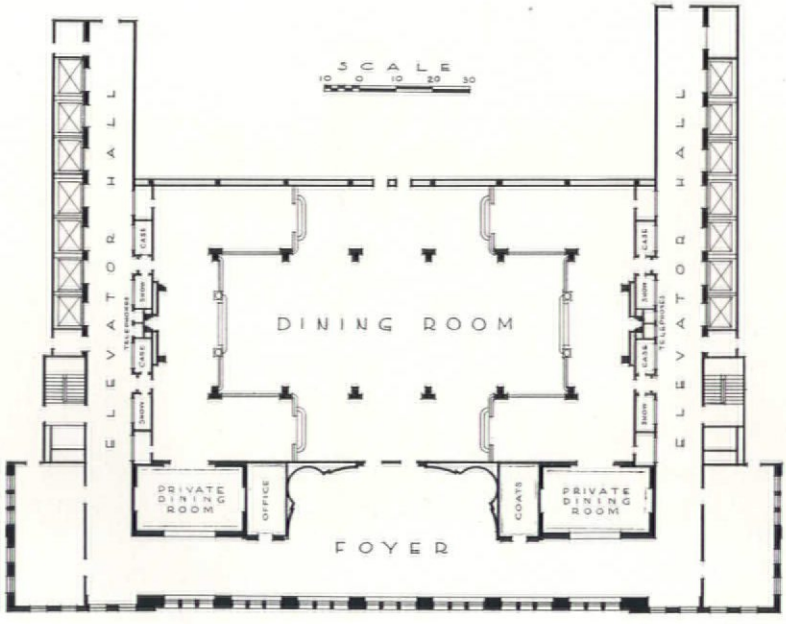
MONTREAL STORE OF T. EATON & CO.
JACQUES CARLU, ARCHITECT OF INTERIOR

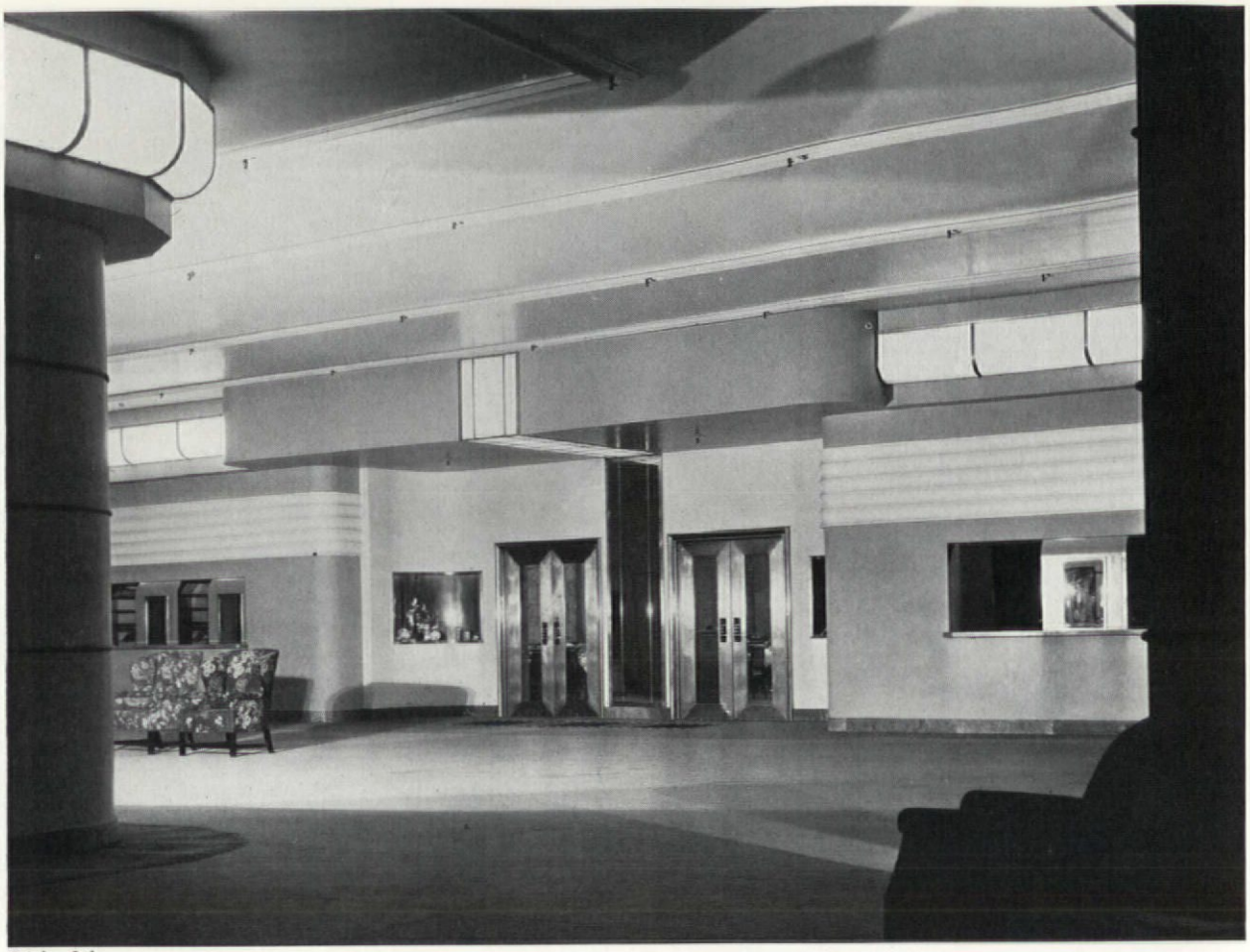
PRIVATE DINING ROOM
MONTREAL STORE OF T. EATON & CO.
JACQUES CARLU, ARCHITECT OF INTERIOR



SECTION THROUGH DINING ROOM

ELEVATOR ARCADE
MONTREAL STORE OF T. EATON & CO.
JACQUES CARLU, ARCHITECT OF INTERIOR





Brigdens Ltd.

ENTRANCE TO COFFEE SHOP
TORONTO STORE OF T. EATON & CO.
JACQUES CARLU, ARCHITECT OF INTERIOR

admitting, through panels of opal glass, natural and artificial light well under control. The aisles are illuminated indirectly with light placed in inverted wells in the ceiling.

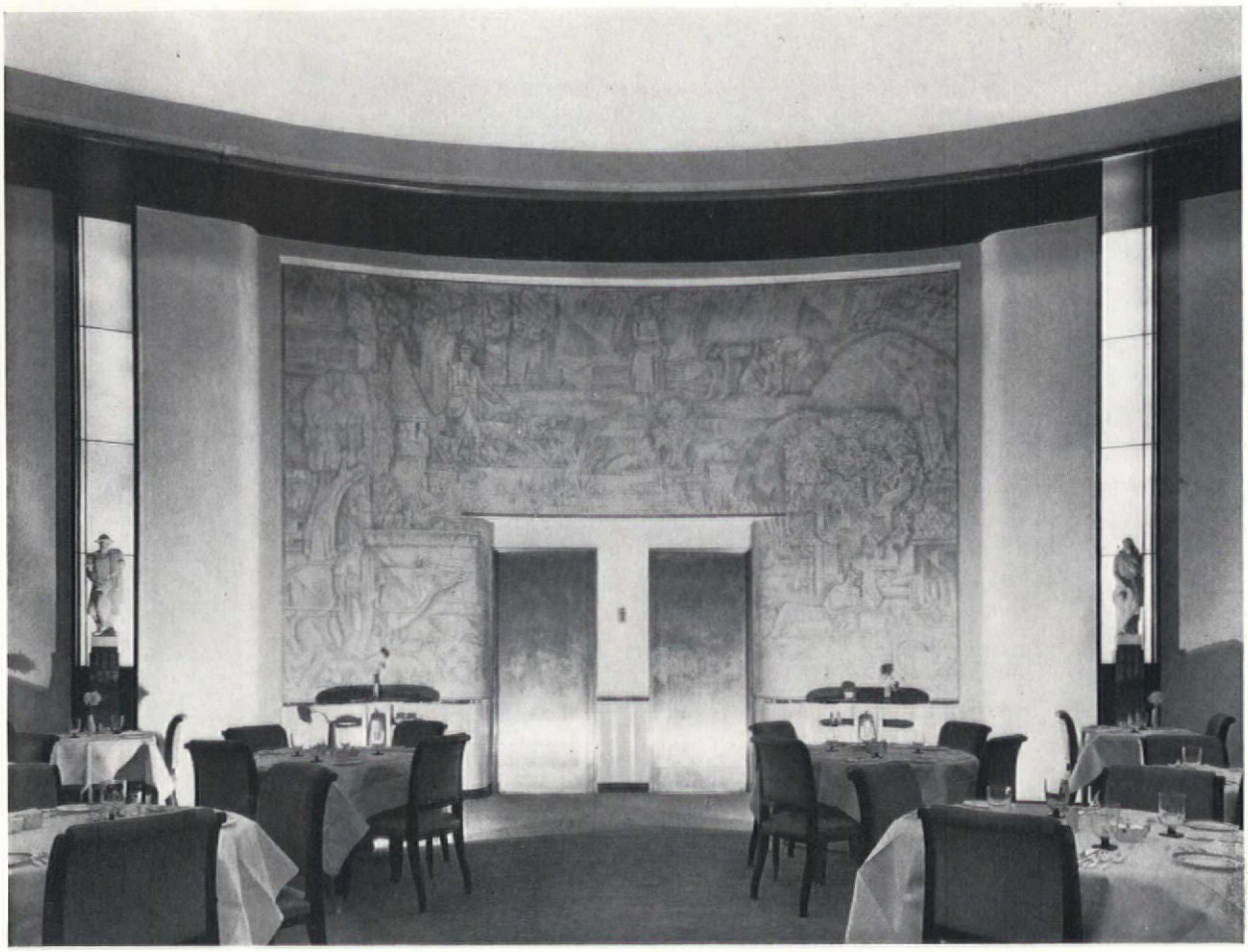
The nave is surrounded with a range of columns of *escalette breche* marble in pink and soft gray, supporting the wall where the clerestory windows are set. The lintels between the columns are decorated with bas-reliefs by Denis Gelin.

At either end and along each side are low raised balconies with railings of Monel metal, reached by steps of black Belgian marble. The walls are covered with a horizontally striped French fabric, beige and pink.

The floor is of *Ruboleum* tiles with an unusual pattern of colors. At both ends of the room are two huge vases of ceramics, resting on Belgian marble bases. These are illuminated from the inside.

Among the appliances incorporated in the design is the radio installation behind Monel metal grilles. Music from the outside can be enjoyed, or in the case of a large banquet or gathering, the voice of the speaker can be well distributed about the dining room.

The platforms at each end have been so arranged as to be transformed easily for staging fashion shows. Concealed electric spotlights have been provided to enhance the displays.



ONE OF FOUR PANELS BY NATACHA CARLU IN COFFEE SHOP
TORONTO STORE OF T. EATON & CO.
JACQUES CARLU, ARCHITECT OF INTERIOR

THE TORONTO STORE

The seventh floor is devoted entirely to public use and includes a large coffee shop, several private dining rooms, lounges, two elevator lobbies, a large foyer, and an auditorium concert hall with seating capacity of 1,500 persons. All furniture and accessories of decoration, lighting fixtures, ventilating grilles, glassware, silverware, china and even the waitresses' uniforms were executed according to our sketches or selected to obtain the greatest harmony.

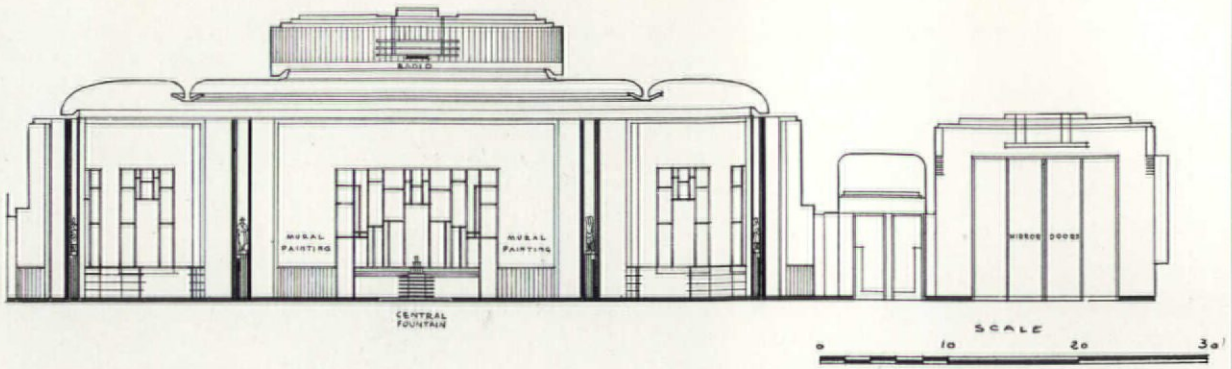
Coffee shop: This domed circular room is built, with recessed alcoves, within a square. It is on the north side of the building.

The color scheme consists of a soft lemon yellow background with black Carrara glass in the ceiling and in the vertical niches. The wide pilasters are of white enamel lacquer. The white enameled terra cotta statuettes were executed by the French sculptor, Denis Gelin. Monel metal, satin finish, was used for the doors, the trimming and all ventilating grilles and lighting fixtures. The fountain in the center of the room is of black and frosted glass. The furniture is of black satinwood; the chairs are upholstered with beige *Fabrikoid*.

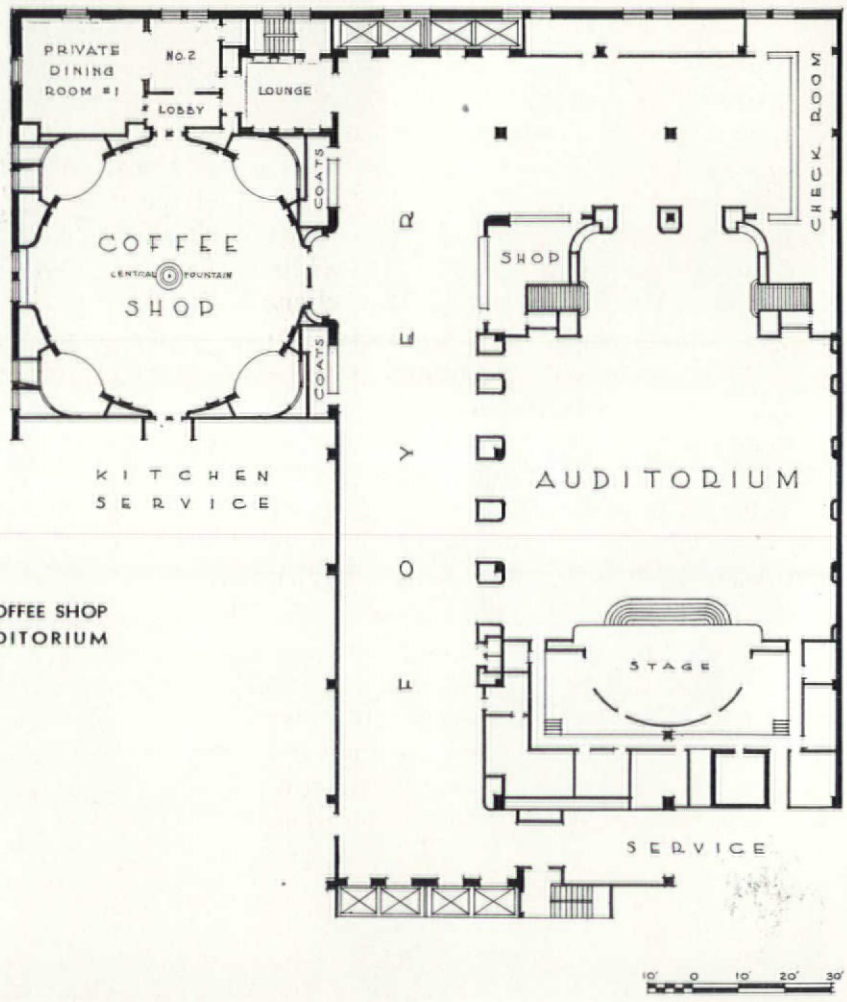
The four mural paintings by Natacha Carlu depict life in the village, the forest, the fields, and by the sea.

SCULPTURE BY DENIS GELIN IN COFFEE SHOP
TORONTO STORE OF T. EATON & CO.
JACQUES CARLU, ARCHITECT OF INTERIOR

DETAIL OF COFFEE SHOP
TORONTO STORE OF T. EATON & CO.
JACQUES CARLU, ARCHITECT OF INTERIOR



CROSS-SECTION OF COFFEE SHOP



PLAN OF COFFEE SHOP AND AUDITORIUM

TORONTO STORE OF T. EATON & CO.
JACQUES CARLU, ARCHITECT OF INTERIOR

PLANNING THE COUNTRY CLUB

By WILLIAM PITKIN, Jr., and SEWARD H. MOTT, Landscape Architects

Assuming that the necessary acreage has been purchased for the purposes of the country club, the problem of first importance is the selection of the right site for the clubhouse and subsidiary buildings. Here the golf architect comes into the picture, but his services are subordinate to those of the landscape architect and architect.

The golf architect's problem is the relationship of the clubhouse to the first and tenth tees and to the ninth and eighteenth greens. Too often building committees have allowed the proposed layout of the course to determine the clubhouse location when, by a consideration for views, natural setting, grades and orientation, the arrangement of holes and order of playing, the courses might have been altered to take advantage of an ideal site for the clubhouse. The architect's duty to his client demands that he stress the importance of the architectural and landscape requirements as contrasted with the purely golfing needs.

When Warren G. Harding was nominated for President, a golf course was hurriedly designed and built at his home town of Marion, Ohio. Landscape architects called into consultation found work about to begin on a clubhouse to be located on open, uninteresting land on the extreme eastern edge of the property, from where all views over the course would be directly into the afternoon sun. The plan of the course contemplated cutting through and practically destroying a fine grove of trees on the western portion of the property. By a simple rearrangement of play on some holes and a radical change in one, the grove was utilized for the clubhouse, the approach drives were brought in on the side nearest the city, and delightful views were obtained over the course.

At the Franklin Hills Country Club near Detroit, a study by landscape architects called in by Albert Kahn, architect, resulted in moving the clubhouse several hundred feet and completely turning it about so that it overlooked a generous portion of the club's own property instead of facing distant views over land which was certain to be developed later as a residential subdivision of unknown and uncontrollable character.

The problems closely following that of location include the arrangement of approach and service drives, provision for parking and the layout of walks from men's and women's locker rooms to tees and greens and professional's quarters.

The drives will naturally vary with the shape and contour of the property, but they should be of ample width and with long flat curves for the fairly fast driving of the man late for his foursome or later yet for his dinner at home.

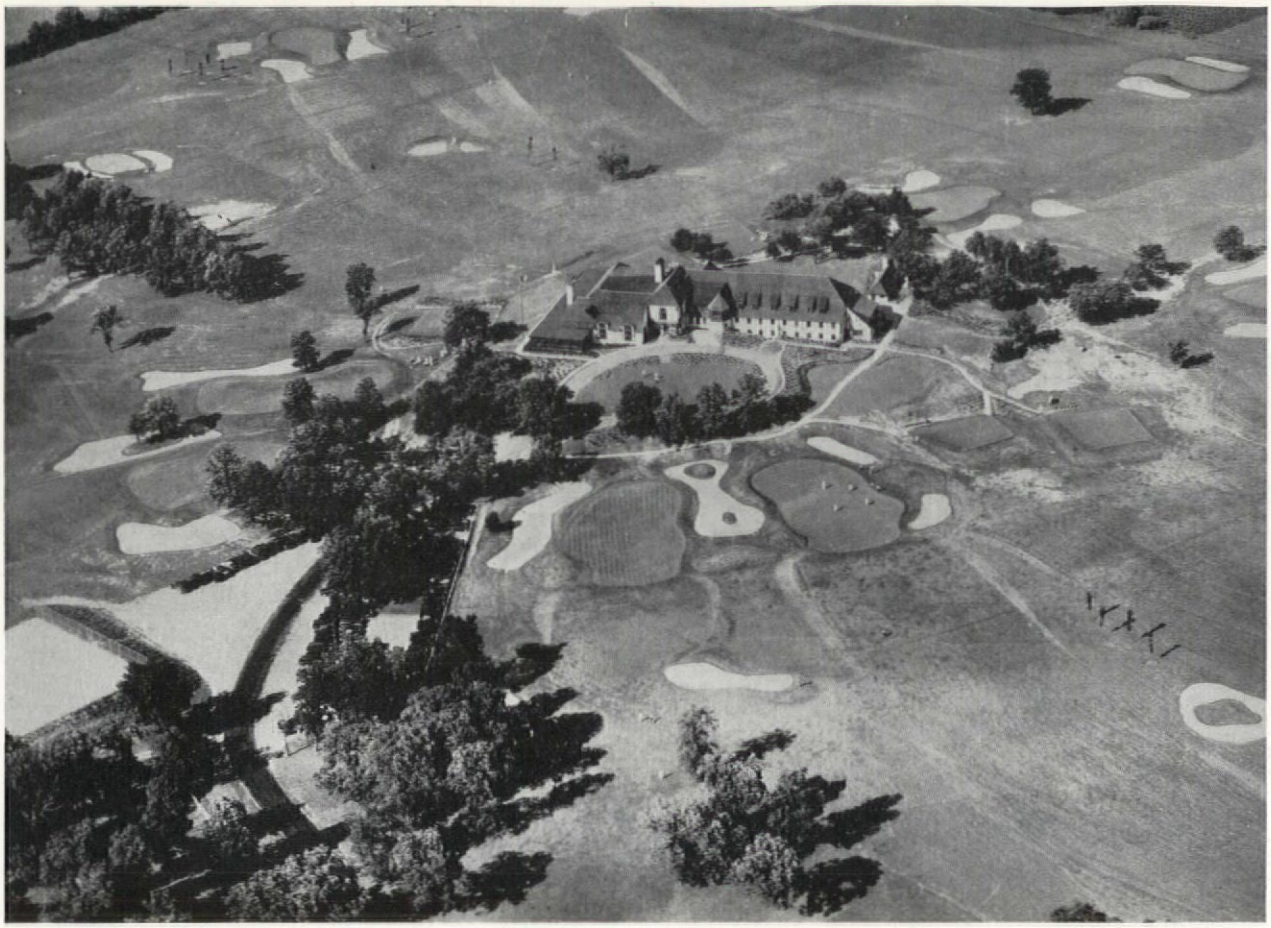
Service should be diverted entirely from all living portions of the clubhouse by well planted minor drives, and these should lead to definite enclosures where all service operations may be concealed.

Parking is as important in country club planning as in all other planning where large numbers of cars are to be stored during rush periods.

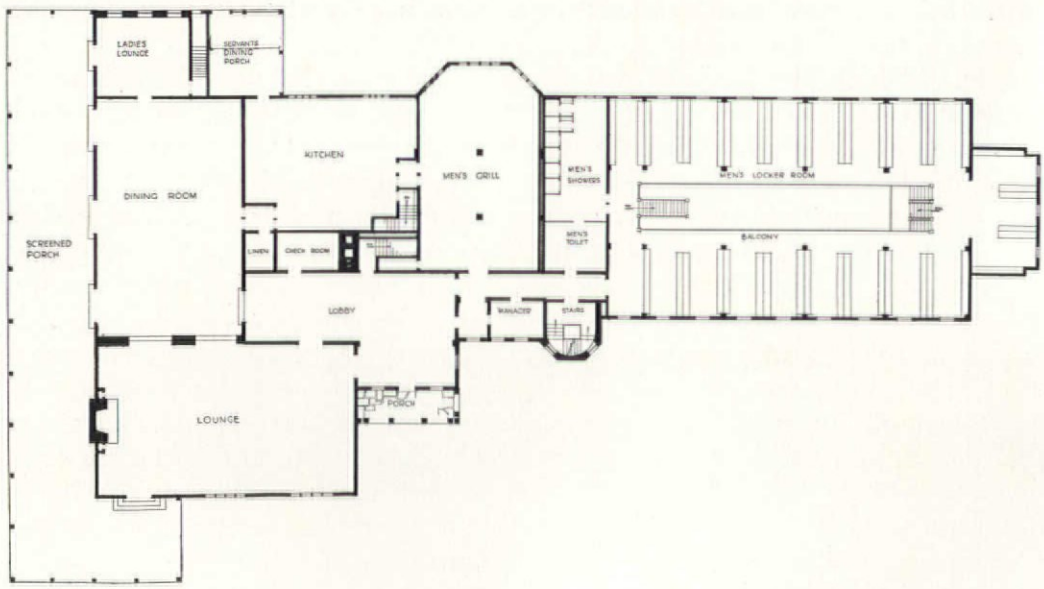
The requirements for parking—

1. *Ample size:* Saturday, Sunday, and holiday needs may demand space for a number of cars equalling 60 to 75 per cent of the number of members. Additional space will be needed for tournaments but this may be at a greater distance from the clubhouse.

2. *Accessibility:* Parking should be near drive entrance to clubhouse so passengers may be unloaded there and driver-member need not have far to go to and from his car. This space should also be reasonably close to men's locker room, especially where the club provides service in carrying clubs, bags, etc.



KILDEER COUNTRY CLUB, PRAIRIE VIEW, ILLINOIS
PHILIP A. DANIELSON, ARCHITECT

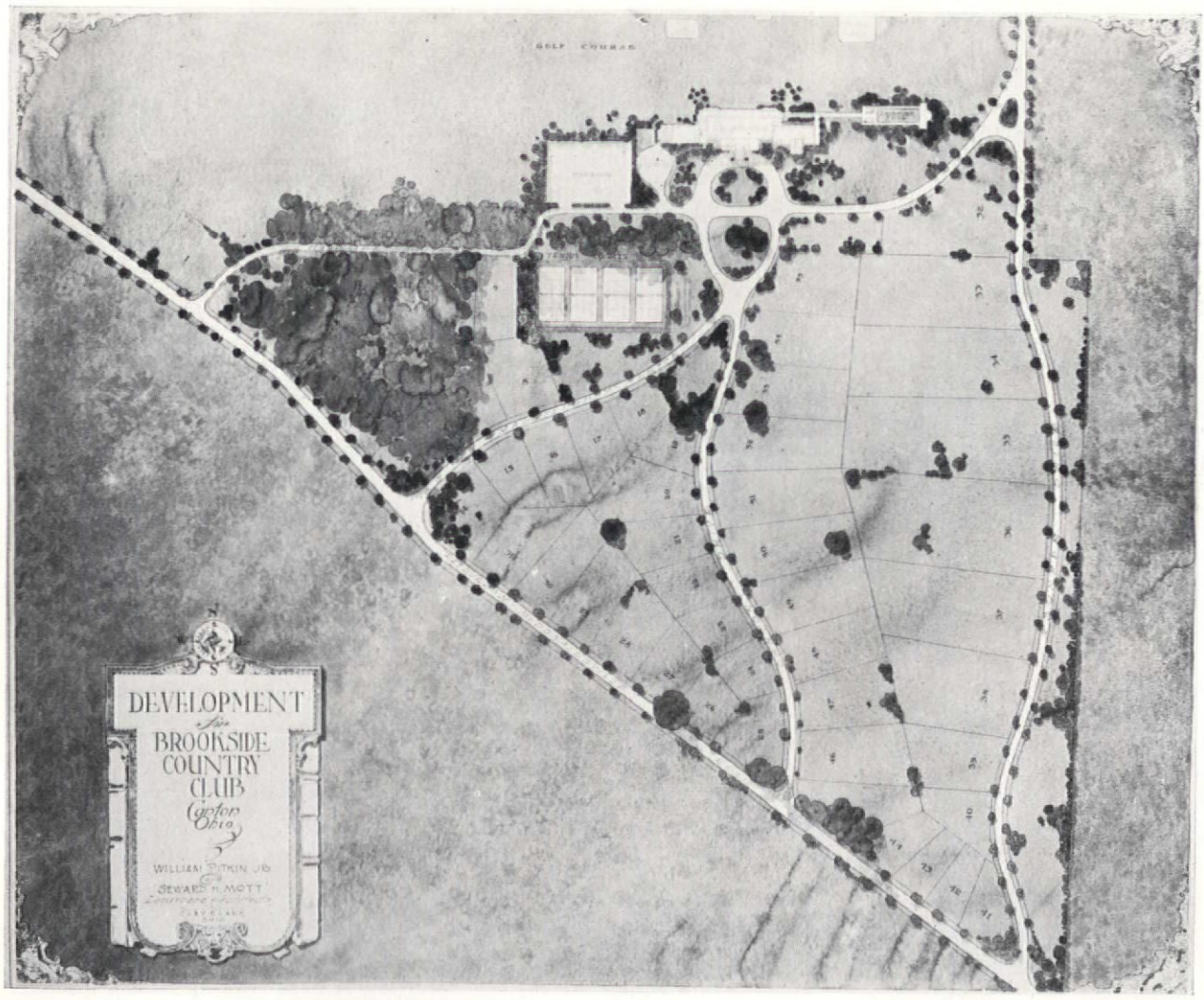


3. *Lighting and marking:* Parking space should be well lighted by standard lamps or floodlights and plainly indicated with permanent markers.

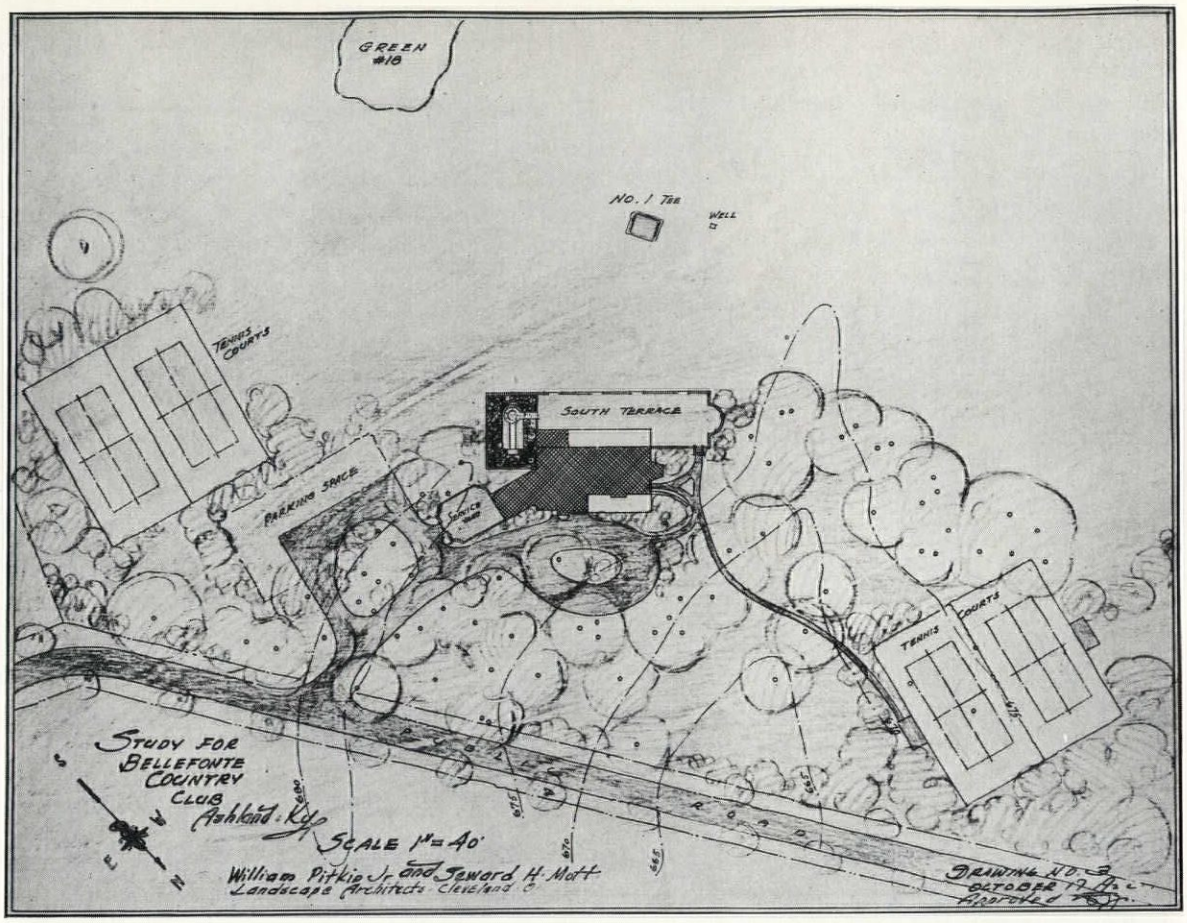
4. *Construction:* Any hard, well-drained surface suitable in good road building is satisfactory. Curbs are practically indispensable, and paved walks next to curb take care of traffic satisfactorily.

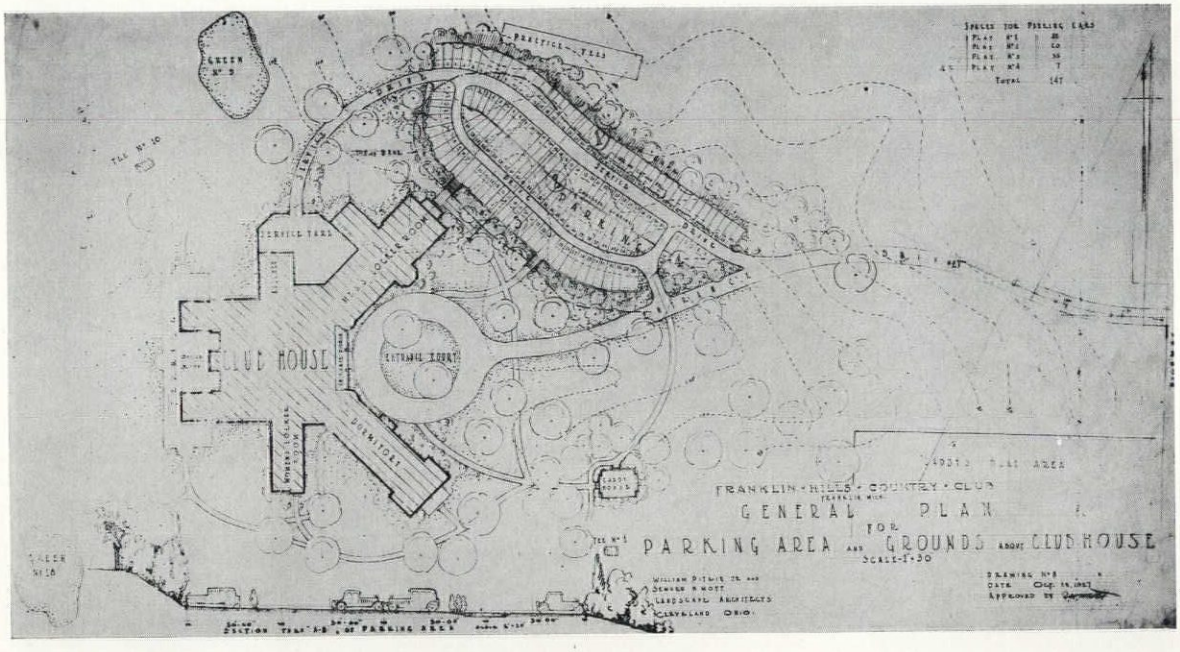
Locker rooms should be convenient to the first and tenth tees and the ninth and eighteenth greens. The arrangement of connecting walks should be direct while avoiding as much as possible the crossing of drives. This phase of the problem also involves the proper location of the professional's and caddy master's quarters so that supplies can be purchased and caddies secured en route to and from the tees and greens. Where outdoor swimming pool and tennis courts are provided, their relationship should also determine the locker room location.

Caddies complicate the planning work. It is essential that they be sufficiently near the starting tees and caddy master's quarters to be quickly available. At the same time, they are usually noisy and disorderly and should be given reasonable opportunity to play while awaiting their turn

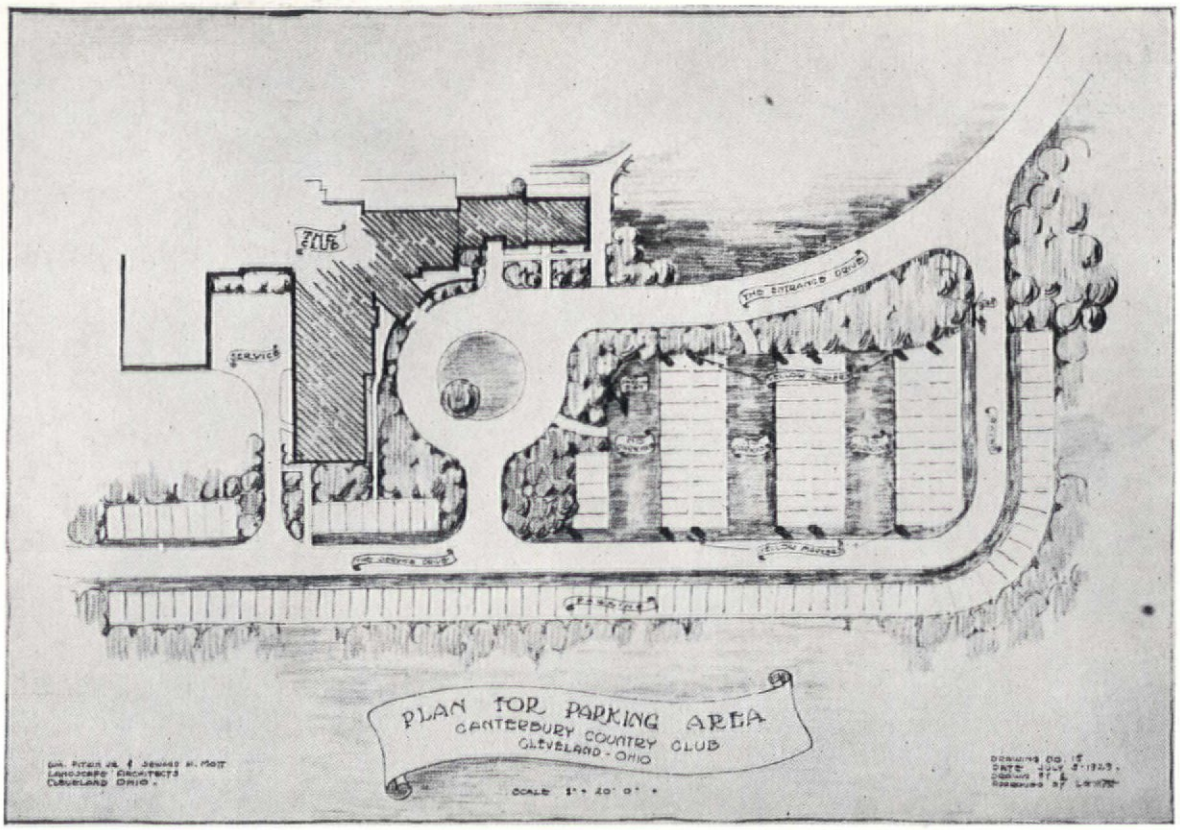


BROOKSIDE COUNTRY CLUB, CANTON, OHIO
WILLIAM PITKIN, JR., AND SEWARD H. MOTT, LANDSCAPE ARCHITECTS





The terrace of the Bellefonte Country Club has an unobstructed view of the first tee and eighteenth green. The Franklin Hills clubhouse was planned to overlook the club's own property instead of facing an undeveloped subdivision of unknown and uncontrollable character.



Parking area requires ample size and accessibility to clubhouse. It should be plainly indicated with permanent markers and well lighted.

for employment. A telephone system to a corral and cabin at a fairly distant secluded spot, with provision for seating a few boys at the caddy master's house, seems to be the most practical solution.

Every club should provide quarters for the storage of golf course equipment and supplies. These may generally be placed at a reasonable distance from the clubhouse.

The general principles here outlined apply to the purely social country club, the club promoted as a selling feature in residential developments and the better grade of pay-as-you-play courses, although, of course, their application will vary in degree in each type.

Realtors are learning the value of a club and golf course to attract buyers, and this field should offer many opportunities to the cooperating architect and landscape architect. The majority of such clubs will undoubtedly be started on a simple basis but will develop logically and be enlarged as the realty project succeeds.

In the pay-as-you-play courses well-kept grounds and buildings have proved a profitable investment. The area required for parking is unusually large, but it may be provided at a greater distance from the clubhouse and less expensively than at a social club.

Planting in all country club projects is limited in extent and variety only by the character of the property, climatic conditions or the question of cost. Considerable screen planting will be required about parking areas and service features and along boundaries. The open terraces, swimming pools, outdoor dance floors and gardens provide the landscape architect with unlimited opportunities to utilize his skill in designing appropriate planting schemes.

Additional water frontage is gained by the use of canals.

NASSAU SHORES COUNTRY CLUB AND SUBDIVISION, LONG ISLAND
OLMSTED BROTHERS, LANDSCAPE ARCHITECTS

Gottscho

NASSAU SHORES COUNTRY CLUB, LONG ISLAND
GROSVENOR ATTERBURY, ARCHITECT
JOHN TOMPKINS, ASSOCIATED

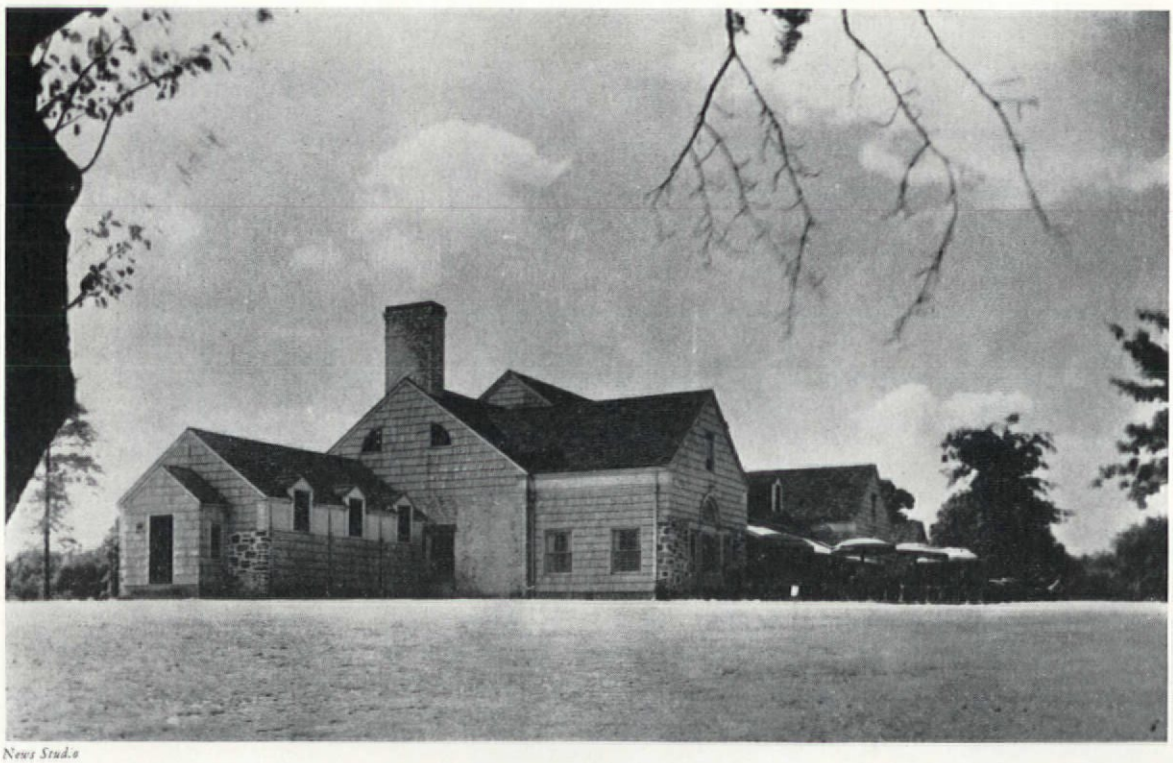
Gottscho

Approximately 7,000 lots have been created in this subdivision of 500 acres as shown on plan on opposite page. The lots are grouped about a 9-hole golf course of 55 acres. Ownership of a building site carries membership in country club and golfing privileges. A bathing pool and pavilion, as well as tennis courts and other recreational facilities, are provided.

Opportunities exist for architects in the development of subdivisions connected with country clubs.

News Studio

ENTRANCE DRIVE TO CLUBHOUSE



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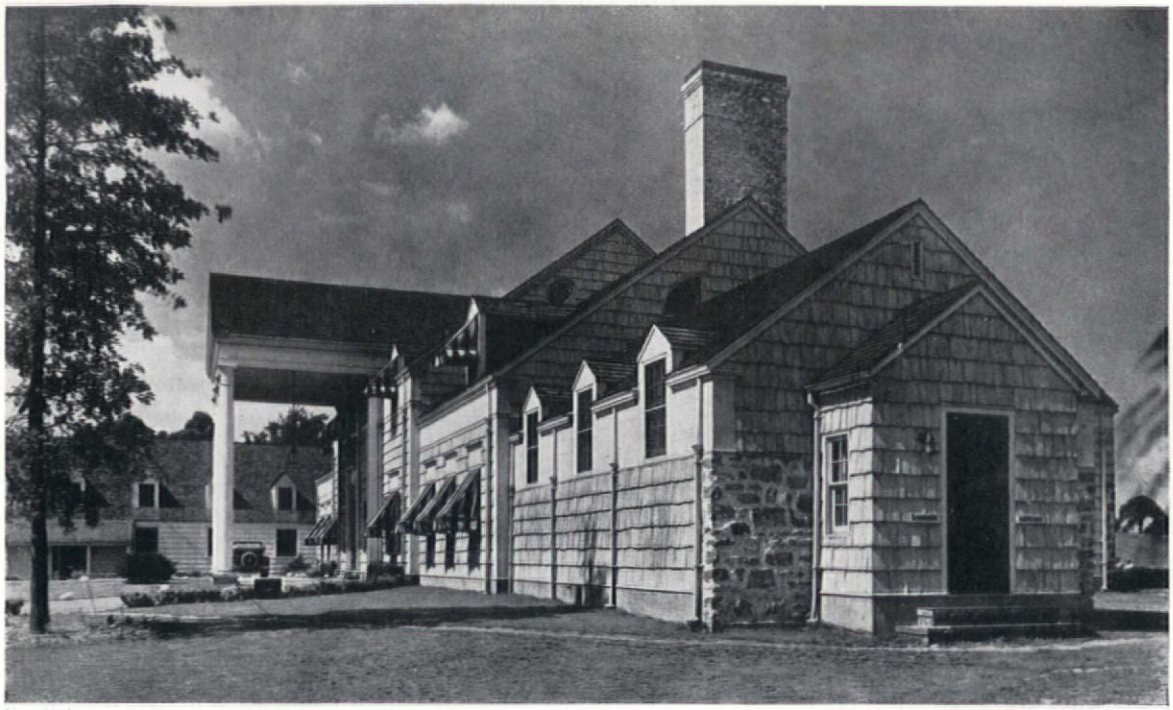
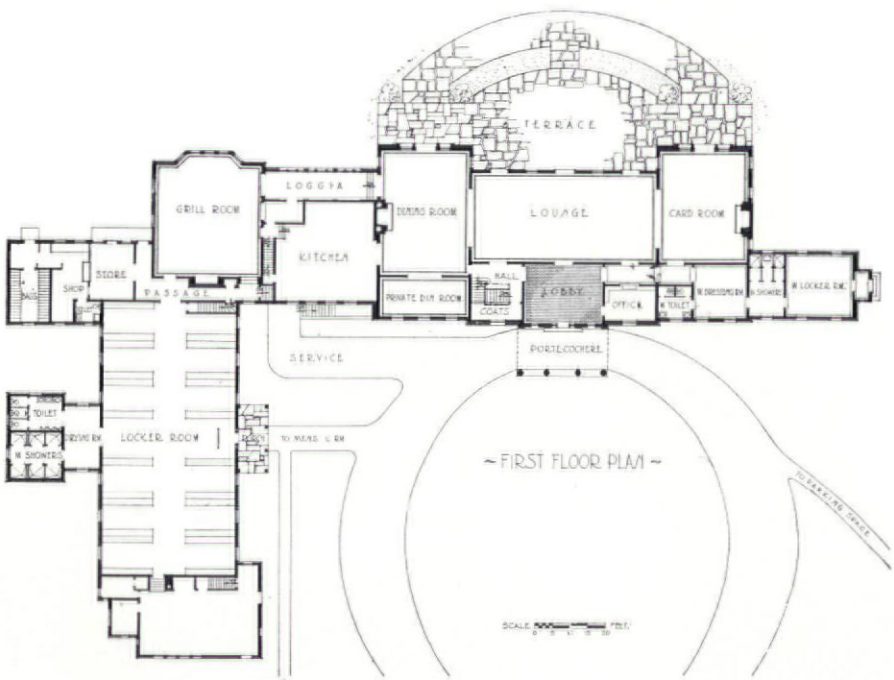
NORTH HEMPSTEAD COUNTRY CLUB
PORT WASHINGTON, LONG ISLAND
C. C. WENDEHACK, ARCHITECT



News Studio

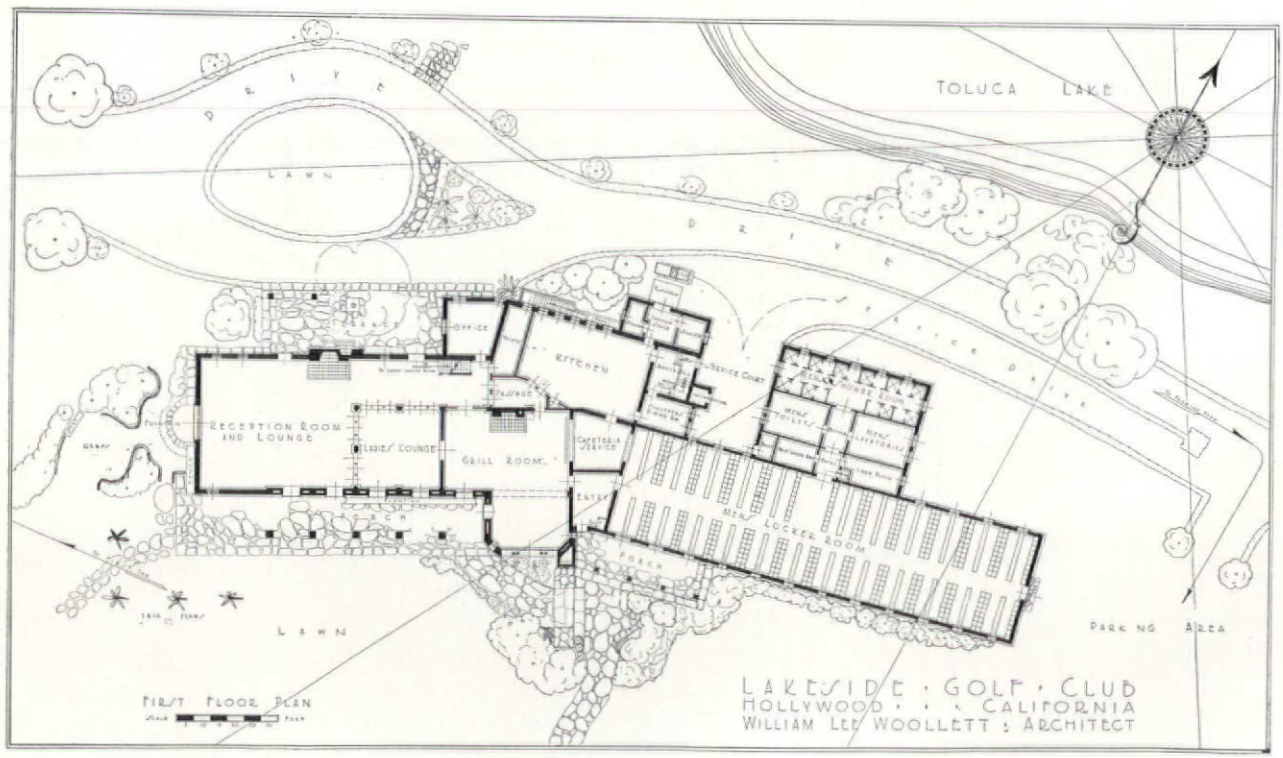
PORTE-COCHERE
DIRECT ENTRANCE TO LOCKER ROOM IN WING BEYOND



NORTH HEMPSTEAD COUNTRY CLUB
PORT WASHINGTON, LONG ISLAND
C. C. WENDEHACK, ARCHITECT

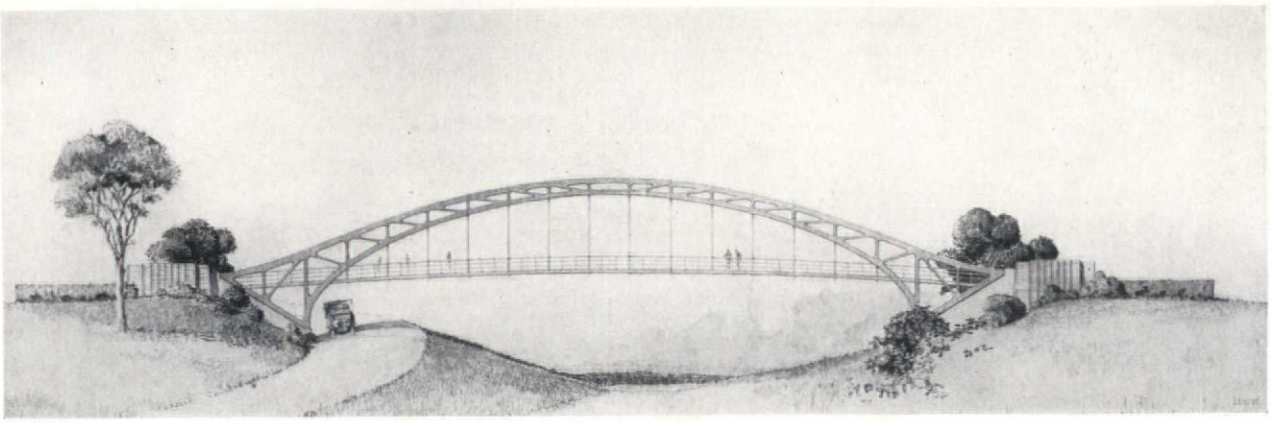
Mott Studios

LAKESIDE GOLF AND COUNTRY CLUB, HOLLYWOOD, CALIF.
WILLIAM LEE WOOLLETT, ARCHITECT



ILLINOIS STATE ARCHITECTURE

C. HERRICK HAMMOND
SUPERVISING ARCHITECT



FOOTBRIDGE FOR ILLINOIS STATE FAIR GROUNDS, SPRINGFIELD

A PORTFOLIO OF REGIONAL WORK RECENTLY EXHIBITED IN THE STATE CAPITOL BUILDING AT SPRINGFIELD:

STATE REFORMATORY FOR WOMEN, DWIGHT
HEWITT, EMERSON AND GREGG, ARCHITECTS

RECONSTRUCTION OF LINCOLN TOMB, SPRINGFIELD

ILLINOIS SOLDIERS' ORPHANS' HOME, NORMAL

ARMORY FOR THE 124th FIELD ARTILLERY, CHICAGO

NATIONAL GUARD ARMORIES, DECATUR & CAIRO

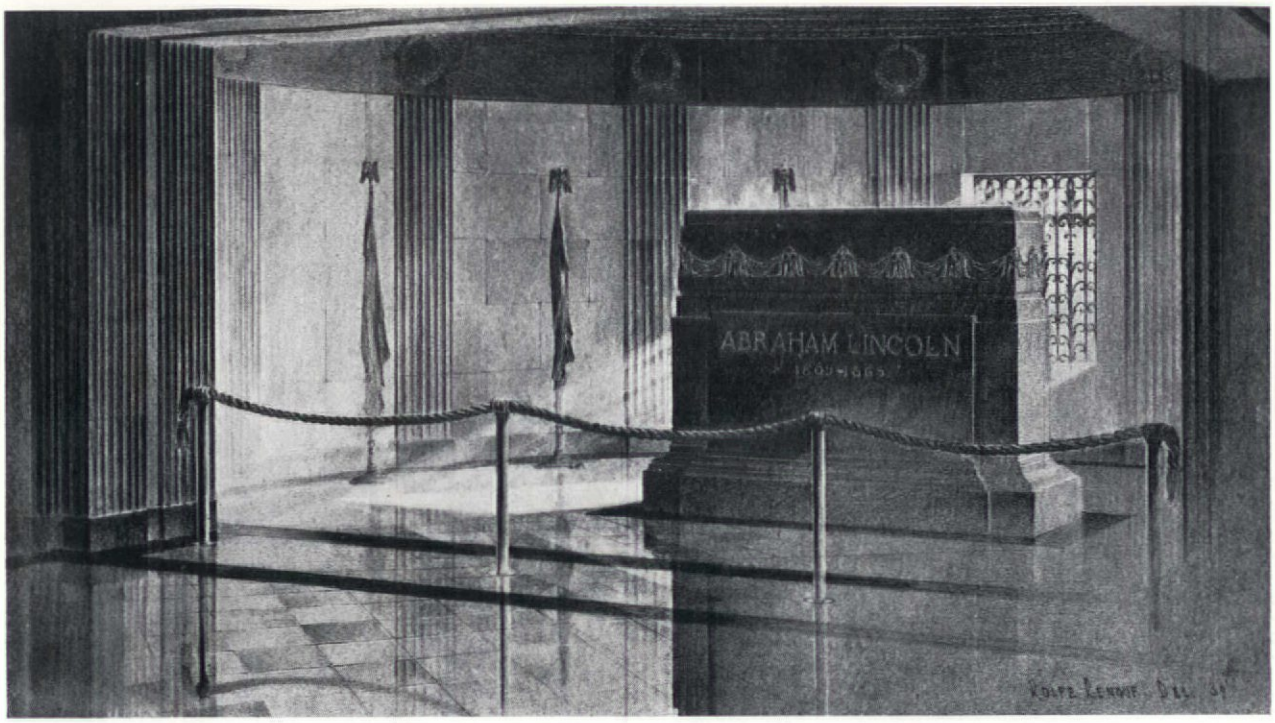
WOMEN'S BUILDING, FAIR GROUNDS, SPRINGFIELD

GARAGE, DIVISION OF HIGHWAYS, SPRINGFIELD

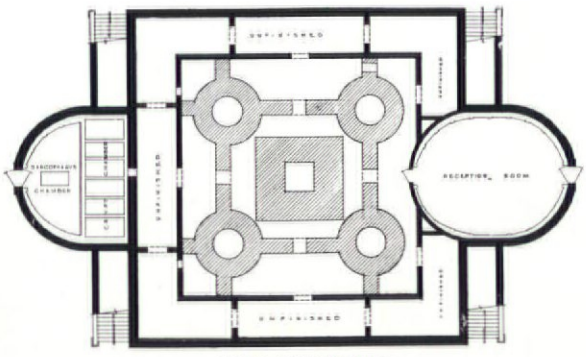
LAUNDRY AND INDUSTRIAL BUILDING

STATE REFORMATORY FOR WOMEN, DWIGHT, ILLINOIS
HEWITT, EMERSON AND GREGG, ARCHITECTS

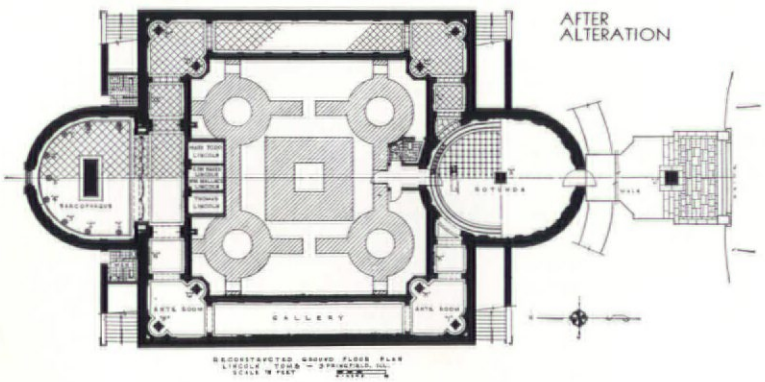
There are 8 cottages, each housing 13 inmates. As the institution develops more cottages are contemplated. The administration building is located close to the main entrance of the institution and provides space for the office help, quarters for the managing officer, nurses, and other officials. Cottages cost 49 cents a cubic foot. Future plans call for additional special buildings, such as schools and work shops.



RECONSTRUCTION OF LINCOLN TOMB, SPRINGFIELD, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT



BEFORE ALTERATION

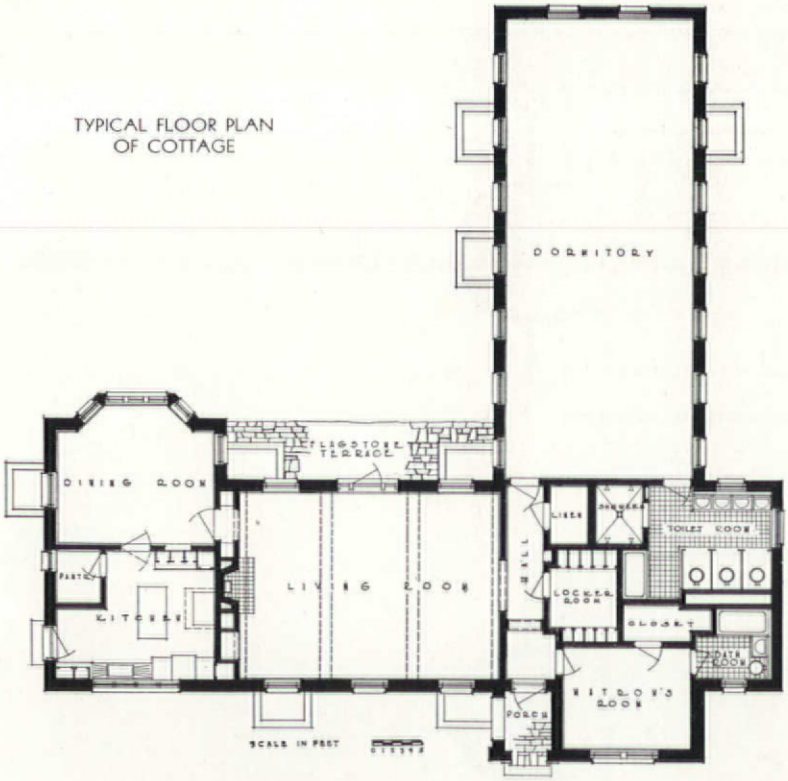


AFTER ALTERATION

The old tomb was in need of repairs and sadly lacking in public circulation space. The sarcophagus chamber has been refinished in marble for the walls and floor. The ceiling is suspended metal lath and plaster gold-leafed. Indirect lighting. The circulation gallery permits display in the corner niches of reproductions of famous Lincoln statues.

ILLINOIS SOLDIERS' ORPHANS' HOME, NORMAL, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT

TYPICAL FLOOR PLAN
OF COTTAGE



ILLINOIS SOLDIERS' ORPHANS' HOME, NORMAL, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT

Purpose: There are 8 cottages, all of the same plan and arranged to provide play yards. Each cottage provides eating and sleeping facilities for 15 orphans, with a total of 120 for the 8 cottages.

Site: Sloping wooded tract of land adjacent to public highway.

Type of construction: Brick walls, concrete floors and wood roof construction.

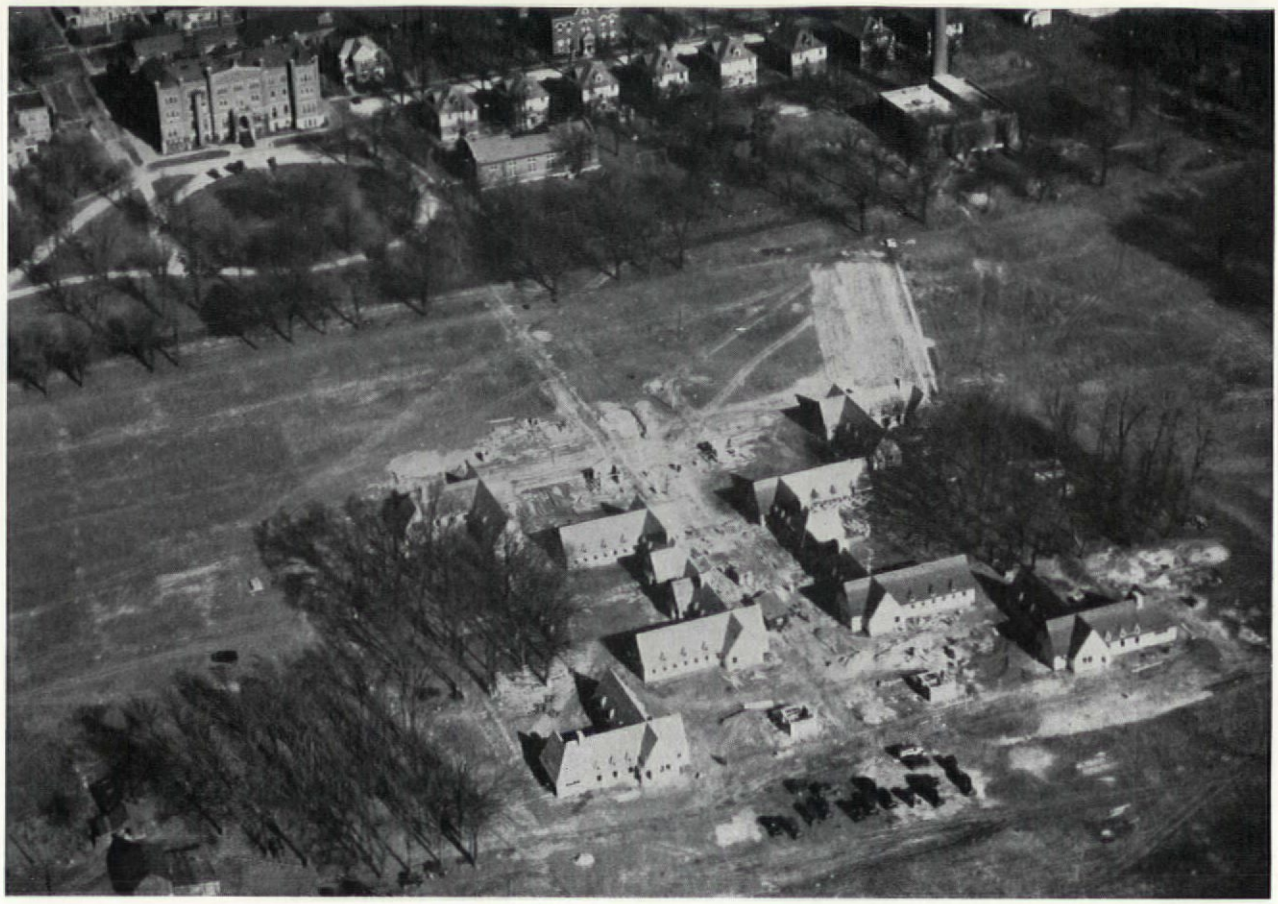
Exterior materials: Common brick painted white, graduated red tile roof.

Interior materials: Plastered walls and ceilings. Terrazzo floor throughout except tile floor in kitchen and rubber tile in living room.

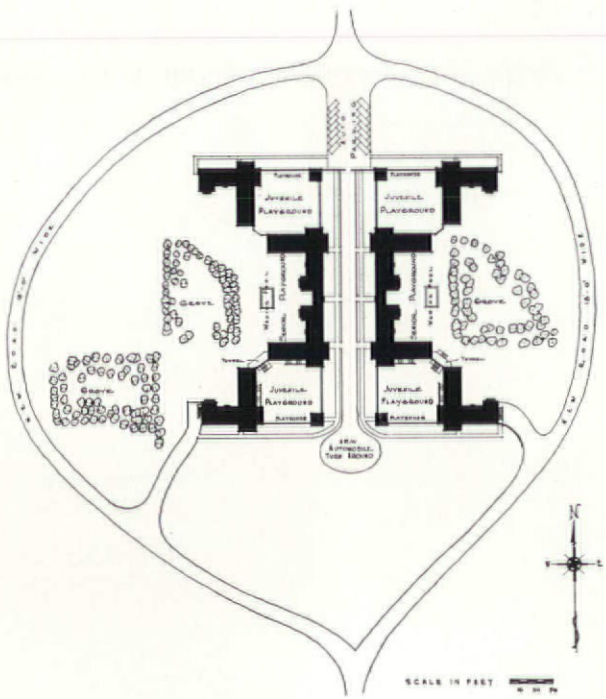
Special features: General group plan which provides for air and sunshine. Play yards. Living room floors with game patterns. Mother Goose stories depicted on fireplaces and other portions of building. Homelike character.

Cost data:
(Cubic contents, 569,788 cubic ft.)

General Work	$132,539.00	or $.23 per cu. ft.
Mechanical Work	57,269.00	or $.10 per cu. ft.
Total	$189,808.00	or $.33 per cu. ft.



ILLINOIS SOLDIERS' ORPHANS' HOME, NORMAL, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT


Juvenile Playground
Juvenile Playground
Juvenile Playground
Juvenile Playground
Gravel
Gravel
Gravel
Gravel
Drive
Drive
Drive
Drive
Entrance
Entrance
Entrance
Entrance
Playhouse
Playhouse
Playhouse
Playhouse
Walk
Walk
Walk
Walk
Parade
Parade
Parade
Parade
Ground
Ground
Ground
Ground
Turnaround
Turnaround
Turnaround
Turnaround
Shade
Shade
Shade
Shade
Trees
Trees
Trees
Trees
Walk
Walk
Walk
Walk
Drive
Drive
Drive
Drive
Entrance
Entrance
Entrance
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Playhouse
Playhouse
Playhouse
Playhouse
Juvenile Playground
Juvenile Playground
Juvenile Playground
Juvenile Playground
Gravel
Gravel
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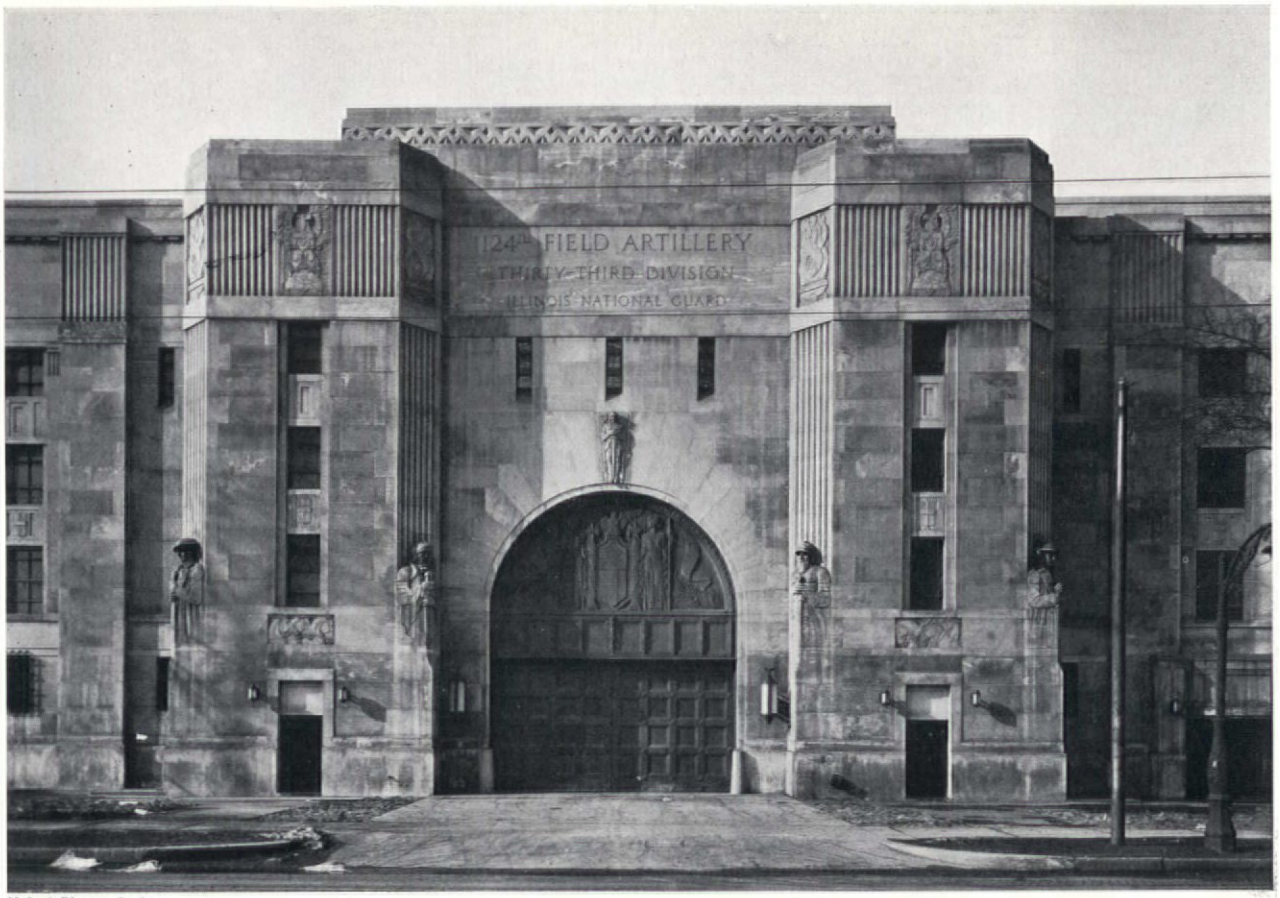


Hedrich-Blessing Studio

ARMORY FOR THE 124th FIELD ARTILLERY, CHICAGO
C. HERRICK HAMMOND, SUPERVISING ARCHITECT

Purpose: To house a complete regiment of field artillery of the Illinois National Guard.

Site: Five acres of level ground bounded on one side by an important street and the other three sides by a city park. The park bridal paths run past the building.

Type of construction: Fireproof. Reinforced concrete floors and roofs. Arena roof of precast featherweight cement slabs.

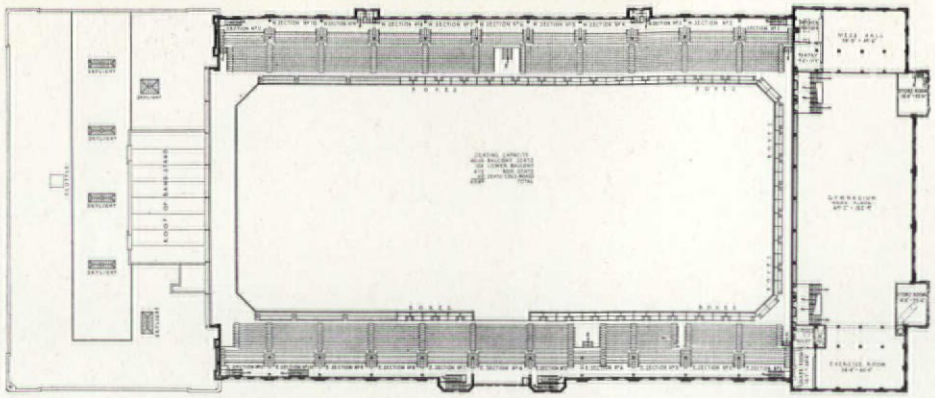
Exterior materials: Shot sawed buff Indiana limestone.

Interior materials: Arena—clay and sand floor, brick walls, steel trusses and skylight. Many rooms have cement floors, face brick walls and exposed concrete ceilings, but some important rooms, such as the club rooms and memorial hall, have plastered walls, terrazzo floors and decorated exposed concrete ceilings.

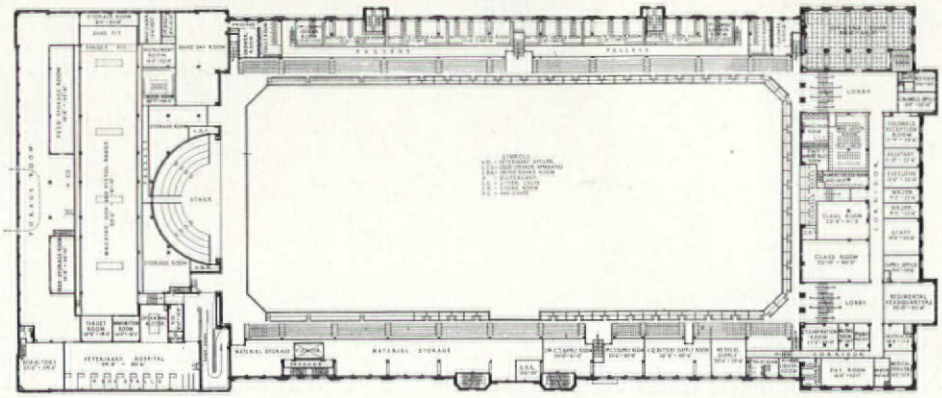
Arena: Clear span of trusses 220′ with 90′ height in center. Area is 324′ by 140′ inside of barricade. Seating capacity 4,700.

Cost data:
(Cubic contents, 8,434,154 cu. ft.)

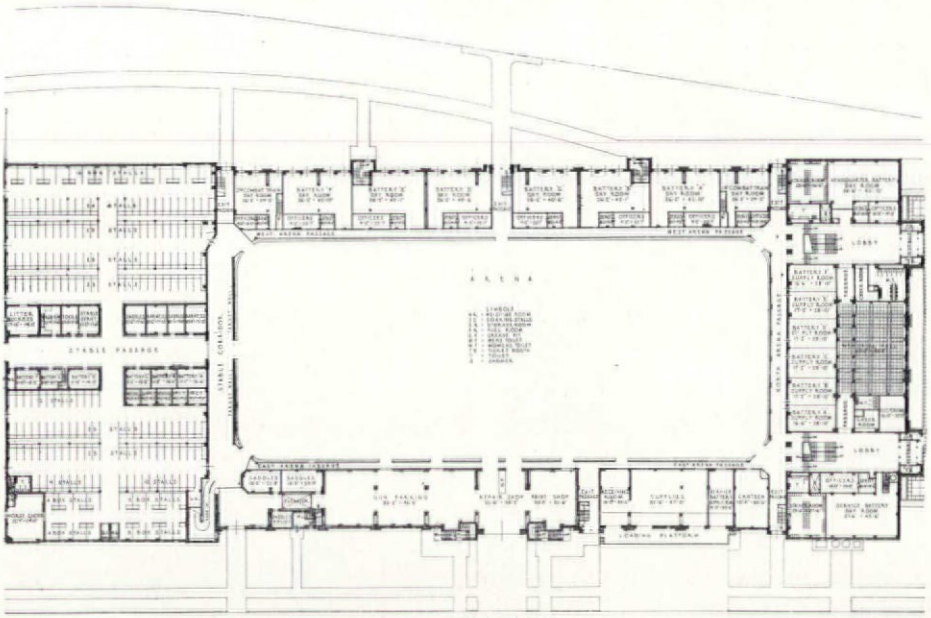
Head House	$393,640.55	or $.29 per cu. ft.
Drill Hall	788,073.70	or $.13 per cu. ft.
Stables	273,054.48	or $.25 per cu. ft.
Total	$1,454,768.73	or $.23 per cu. ft.



THIRD FLOOR PLAN

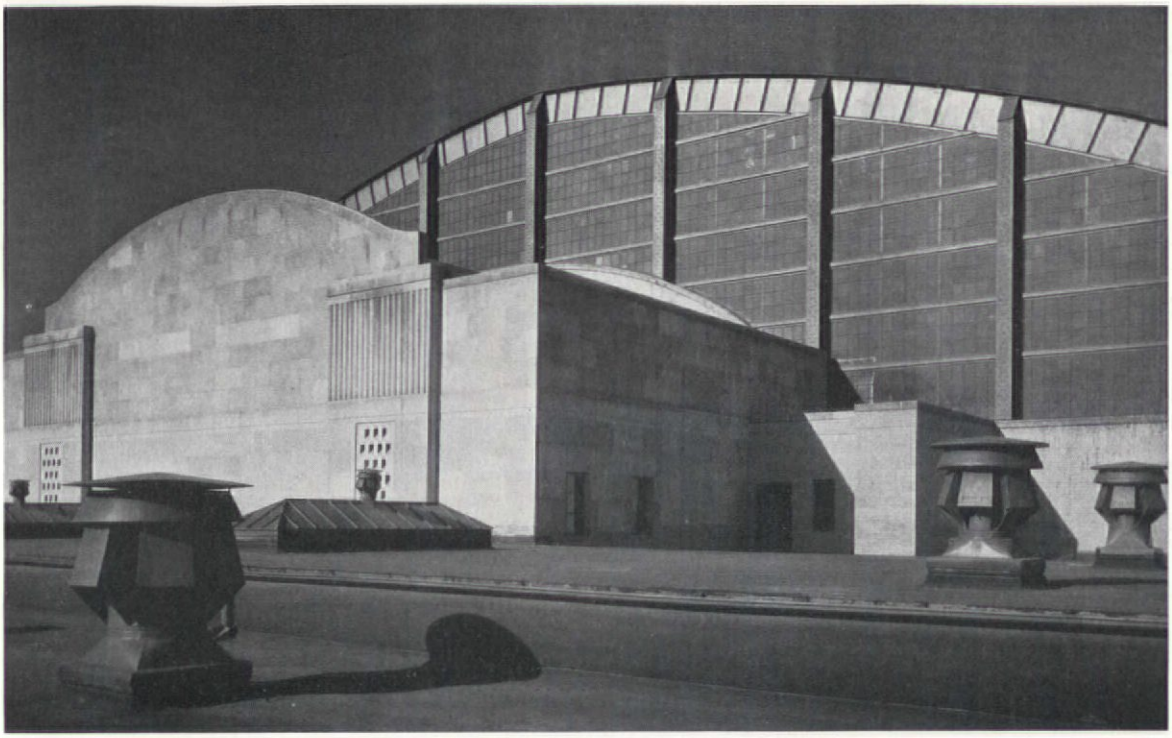


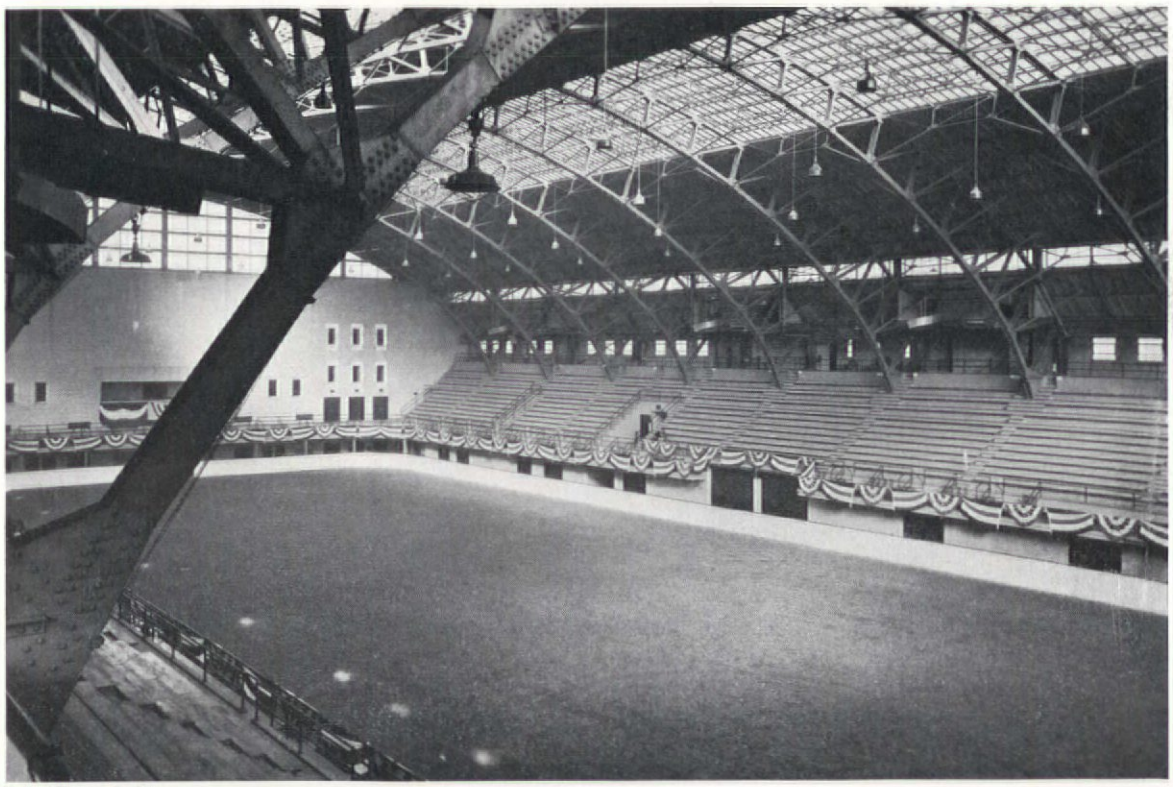
SECOND FLOOR PLAN



FIRST FLOOR PLAN

ARMORY FOR THE 124th FIELD ARTILLERY, CHICAGO
C. HERRICK HAMMOND, SUPERVISING ARCHITECT



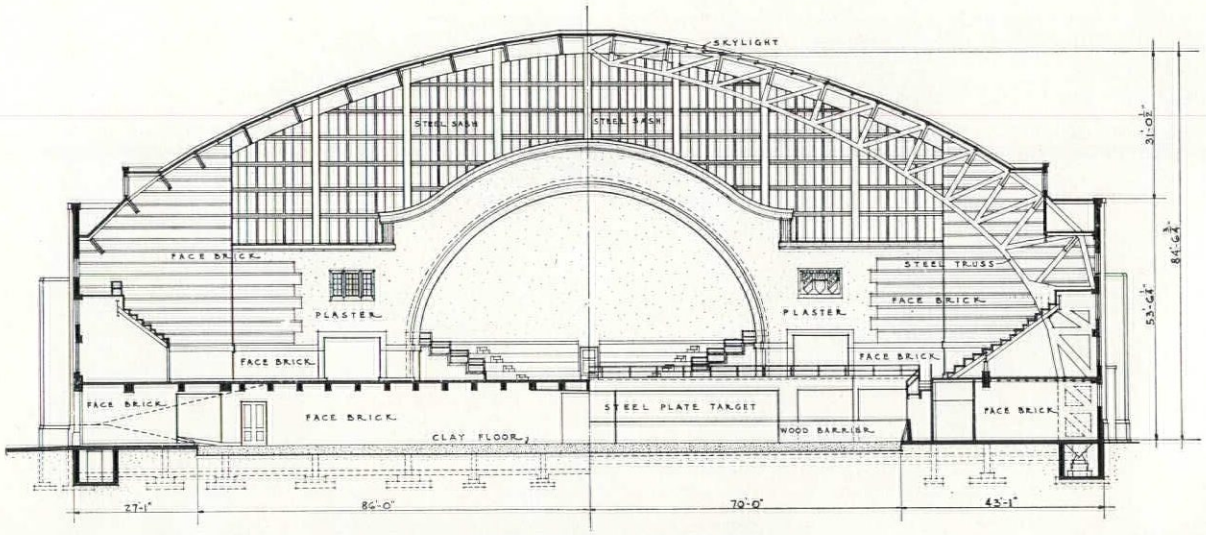


Hedrich-Blessing Studio

ARMORY FOR THE 124th FIELD ARTILLERY, CHICAGO
C. HERRICK HAMMOND, SUPERVISING ARCHITECT

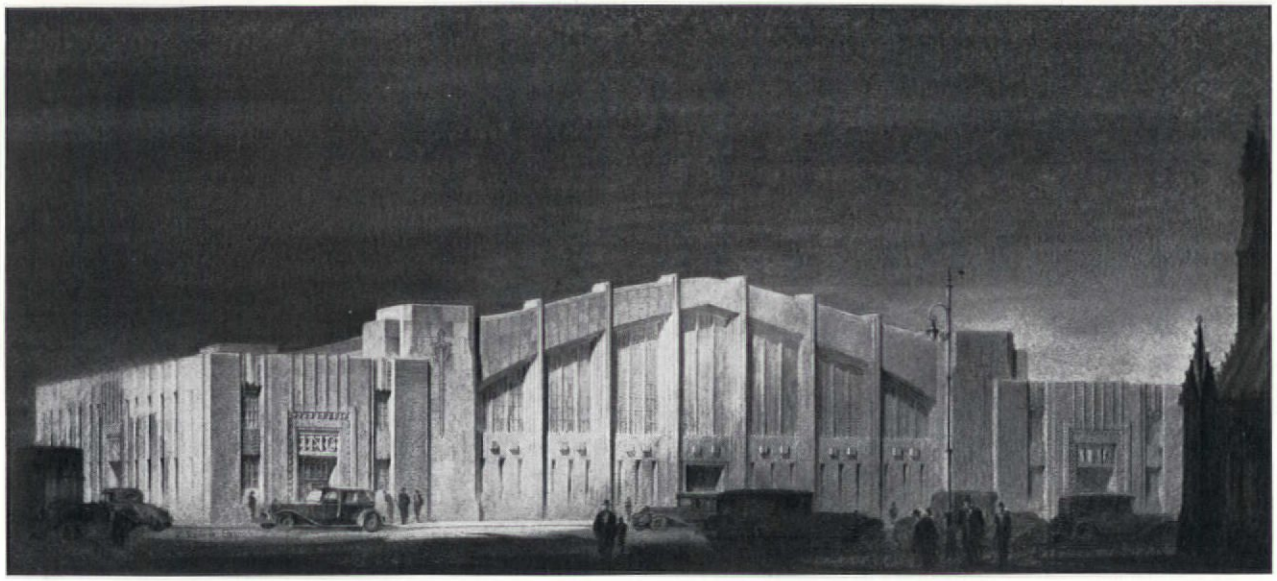
Hedrich-Blessing Studio

GYMNASIUM



CROSS SECTION THROUGH ARENA
LOOKING TOWARD BAND STAND

ARMORY FOR THE 124th FIELD ARTILLERY, CHICAGO
C. HERRICK HAMMOND, ARCHITECT



NATIONAL GUARD ARMORY, DECATUR, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT

Purpose: To house two companies and a band of the Illinois National Guard. The drill hall will also serve for public functions and basketball games, and the kitchen can be used for public dinners. A banquet hall and suitable rest room facilities have been provided to meet public requirements.

Site: Practically level.

Type of construction: Fireproof. Load bearing exterior walls. Plastered walls and ceilings. Drill hall roof is poured gypsum on insulation board.

Exterior materials: Buff faced brick of three closely shaded colors. "Old Gothic" Indiana limestone trim and ornamental features. Main entrance doors are natural finish oak with wrought iron hardware and studs.

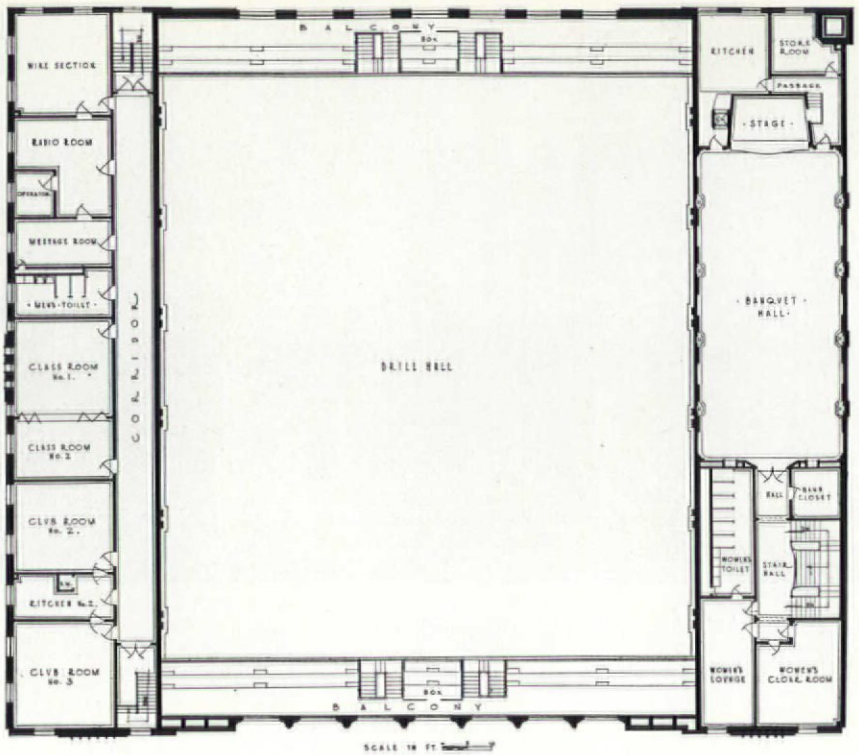
Interior materials: Plastered walls and ceilings throughout except in drill hall which has exposed insulation board for acoustics. Salt glazed brick wainscoating about 8 feet high is provided in the drill hall.

Floors: Cement monolithic finish throughout except in drill hall which has a maple floor. The banquet hall has a parquetry floor.

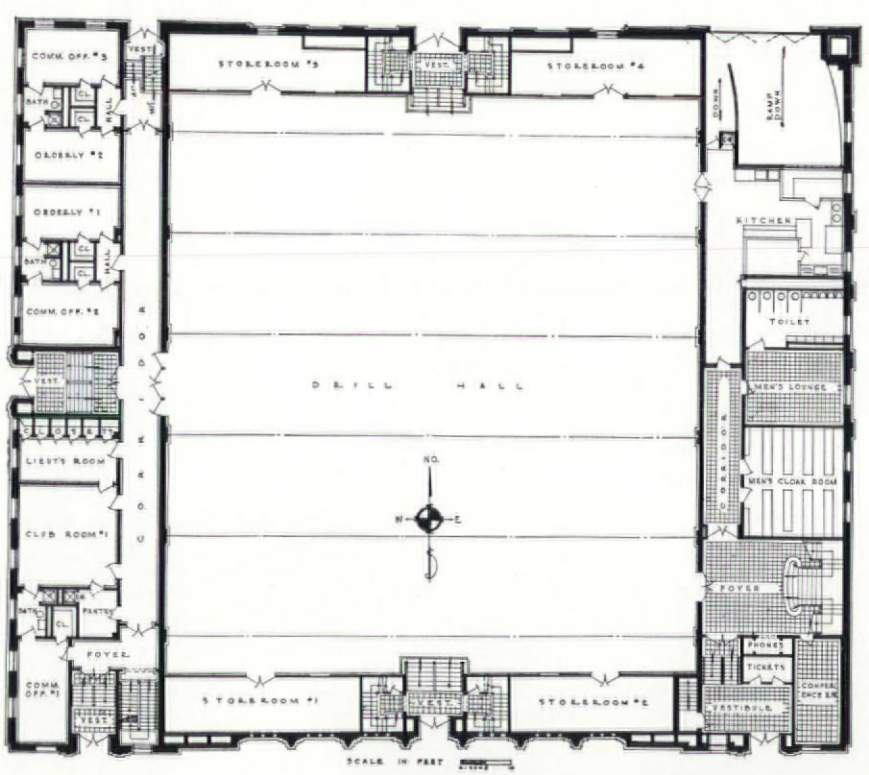
Special features: The plan of the building is such that rentable sections and the sections allotted to the officers and men are separated. The banquet hall has special wall lighting and combination daylight sash, nickel-plated lighting fixtures and ventilating space. Interior rifle range in the basement is used for tournaments.

Cost data:
(Cubic contents, 1,124,000 cu. ft.)

General Work	$164,268.00	or $.14½	per cu. ft.
Mechanical Work	44,670.00	or $.04	per cu. ft.
Total	$208,938.00	or $.18½	per cu. ft.

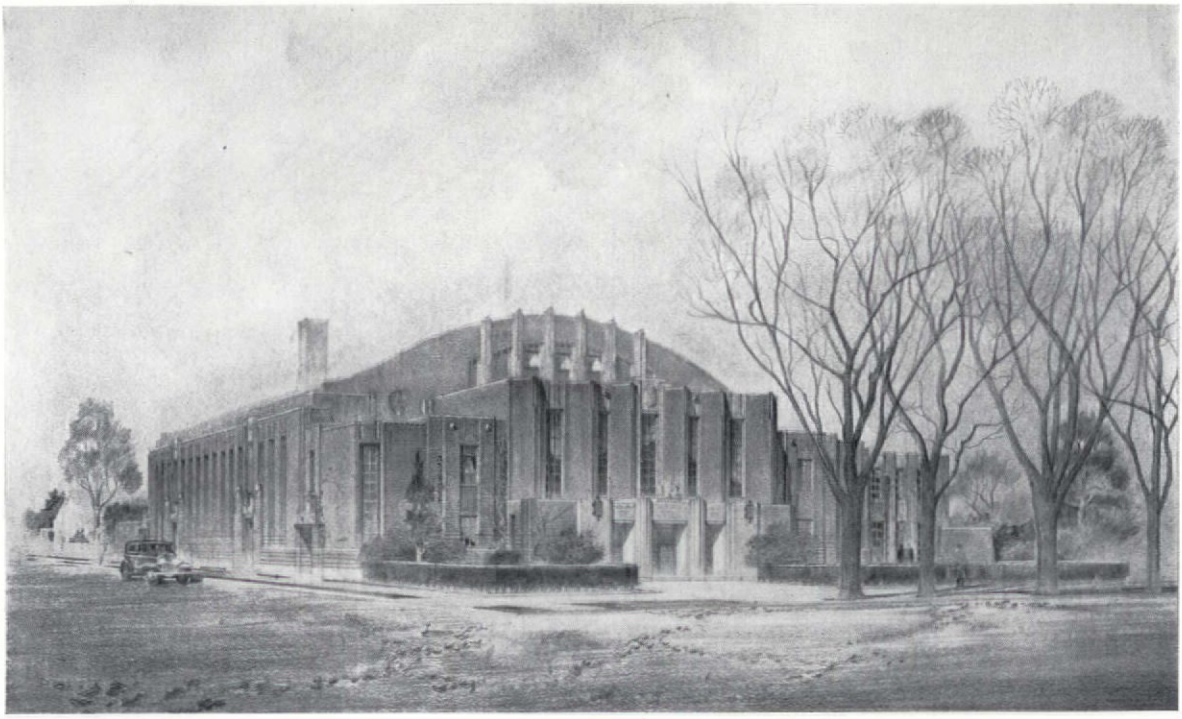


SECOND FLOOR PLAN



GROUND FLOOR PLAN

NATIONAL GUARD ARMORY, DECATUR, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT



NATIONAL GUARD ARMORY, CAIRO, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT

Purpose: To house one company of the Illinois National Guard. Suitable lockers and toilet facilities have been provided for peace time drilling and training, and adequate kitchen facilities added for taking care of the troops during mobilization. The drill hall will serve not only for military training, but also as an auditorium for civic functions, thus providing a source of revenue. A large banquet hall on the second floor is used by both the National Guard and the public. Due to poor soil bearing conditions and underground water in this vicinity, it was necessary to plan all features above ground.

Site: Level ground; frontage on main thoroughfare of city, three blocks from center of business district.

Type of construction: Foundations are of the floating type. Brick bearing walls. Concrete floors and roofs with exposed beams and joists below. Auditorium roof, poured gypsum on insulation board.

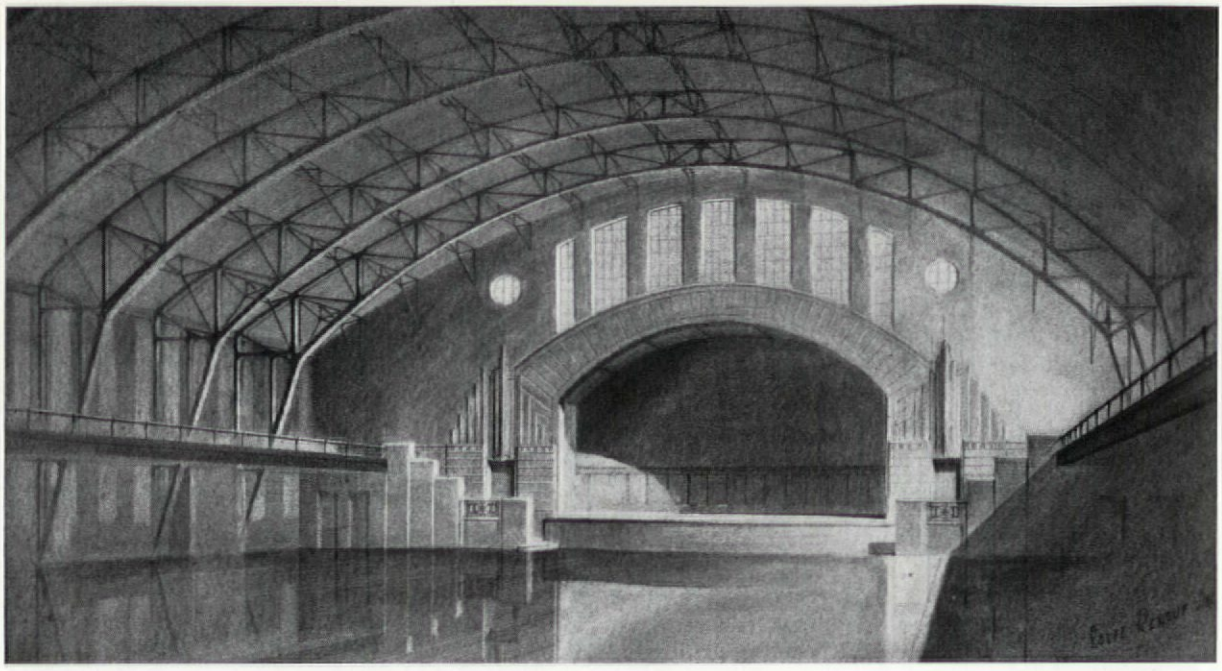
Exterior materials: Face brick ranging from dark red to dark blue, overburnt and slightly warped. Buff Indiana limestone trim and ornament. Projected steel sash. Wood doors painted blue-green with black wrought iron hardware.

Interior materials: In order to keep down not only the first cost but also maintenance, plastered surfaces were eliminated and all interior door frames were made of steel. In all rooms except storerooms and boiler room a salt-glazed brick wainscoting 6' high is used with a smooth-faced face brick above. The auditorium acoustics are cared for by the exposed insulation board at the ceiling and a rough-faced face brick chosen for the walls. The ceilings throughout are stained concrete beams and joists.

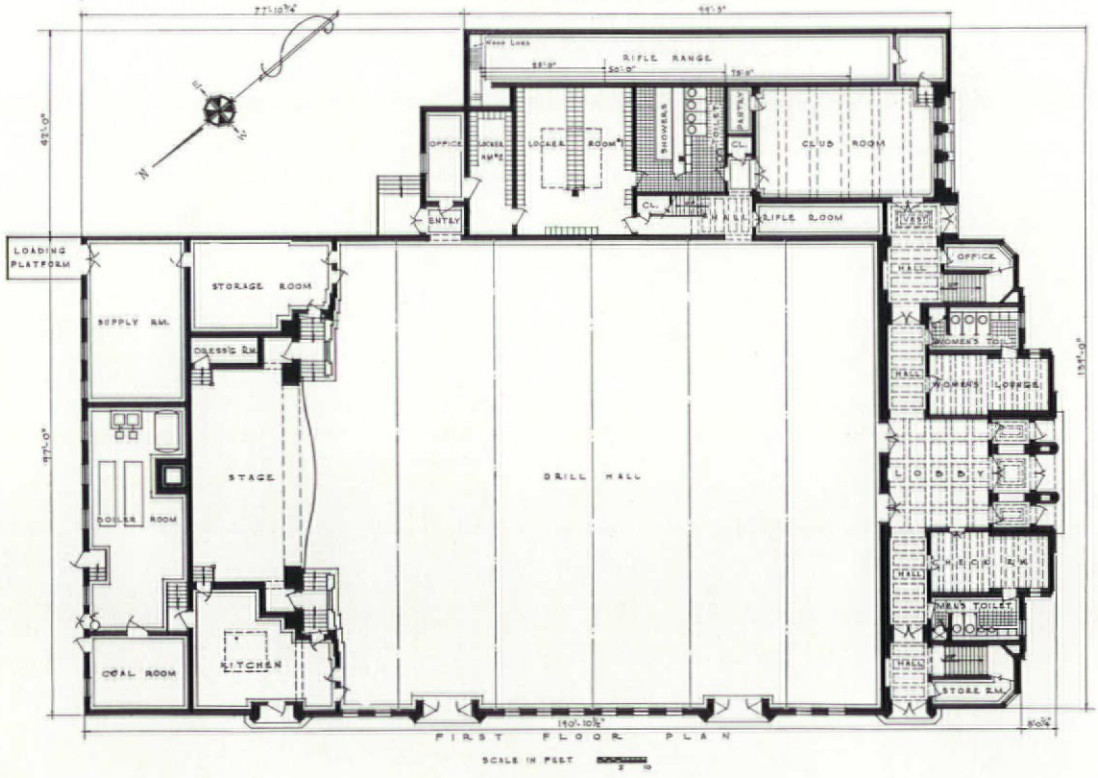
Special features: Stage proscenium arch built of concrete veneered with brick. Cantilever balcony.

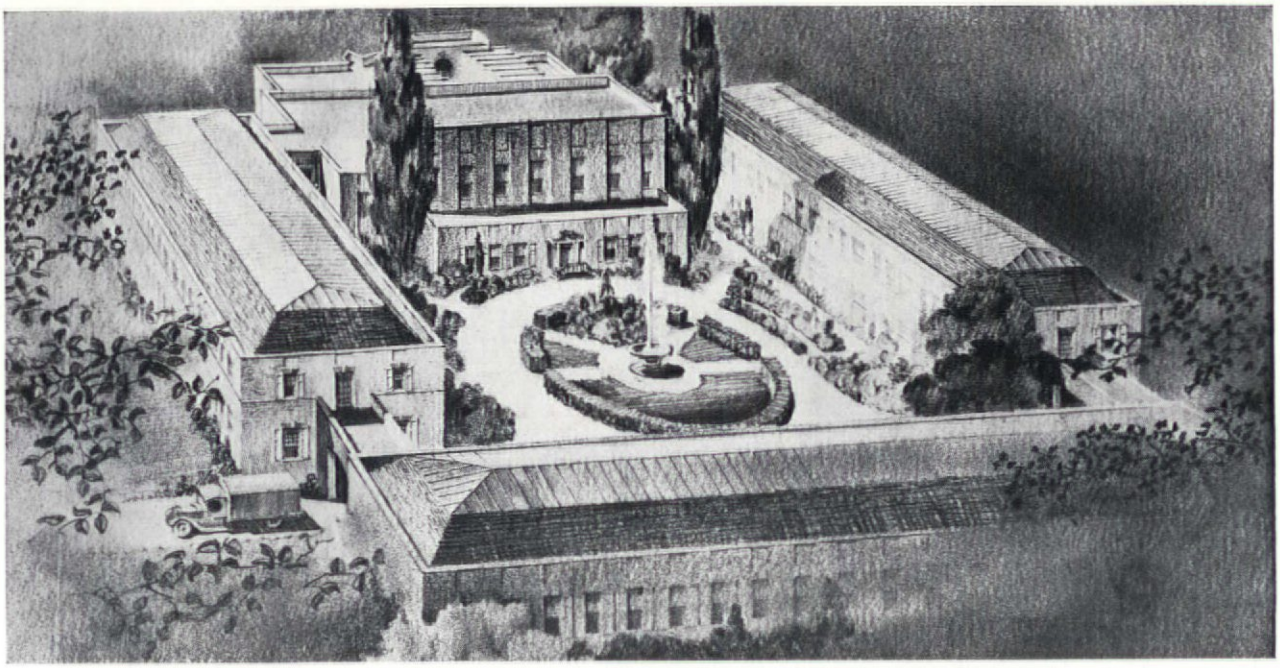
Cost data:
(Cubic contents, 763,830 cu. ft.)

General Work	$122,356.00	or $.16 per cu. ft.
Mechanical Work	30,821.00	or $.04 per cu. ft.
Total	$153,177.00	or $.20 per cu. ft.



DRILL HALL
NATIONAL GUARD ARMORY, CAIRO, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT





WOMEN'S BUILDING
STATE FAIR GROUNDS, SPRINGFIELD, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT

Purpose: To provide exhibition space for the state fair and house a domestic science school. One hundred twenty-five girls are selected from state counties and live in the building for the duration of the course. The building is used only two weeks during mid-summer and is planned so that, when not in use, it can be tightly locked and secured against vandalism. Plastered surfaces and steam radiators are reduced to a minimum so the freezing weather can have little or no effect.

Site: Practically level, bounded by two streets.

Type of construction: Fireproof. Wall bearing concrete floors. Roofs over side and rear wings are concrete poured over insulation board.

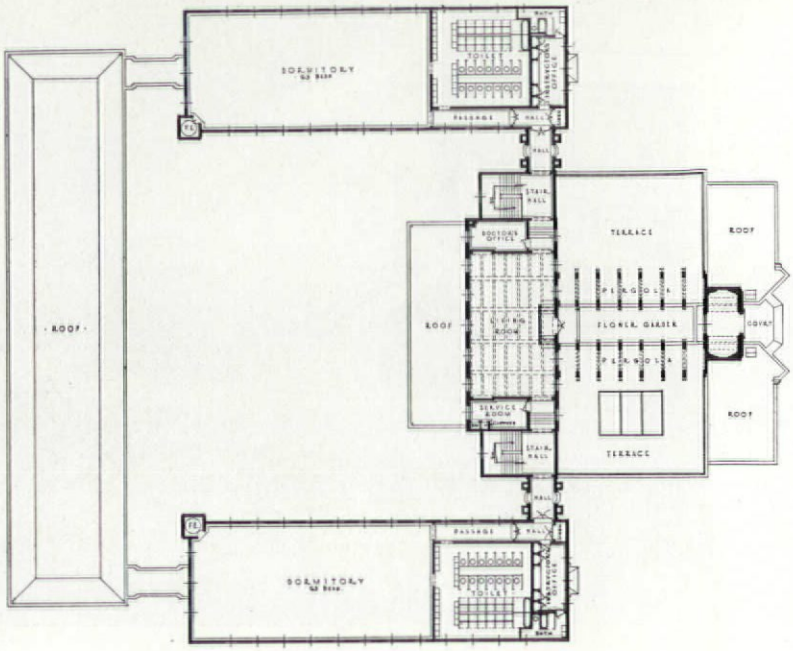
Exterior materials: Face brick and buff Indiana limestone. Bricks range from red to dark blue, overburned and slightly warped. Joints are raked with blunt wood sticks. Water table and base are concrete with wood veneer form linings where exposed above grade. Exterior wood work painted white.

Interior materials: Smooth brick walls, painted throughout except in auditorium, dining room, officers' serving room and entrance hall which are plastered. Exposed concrete ceilings, painted (stained in central unit of building). Cement floors, monolithic finish throughout except in auditorium, dining room, sewing room, offices, entrance hall of central unit where terrazzo is used.

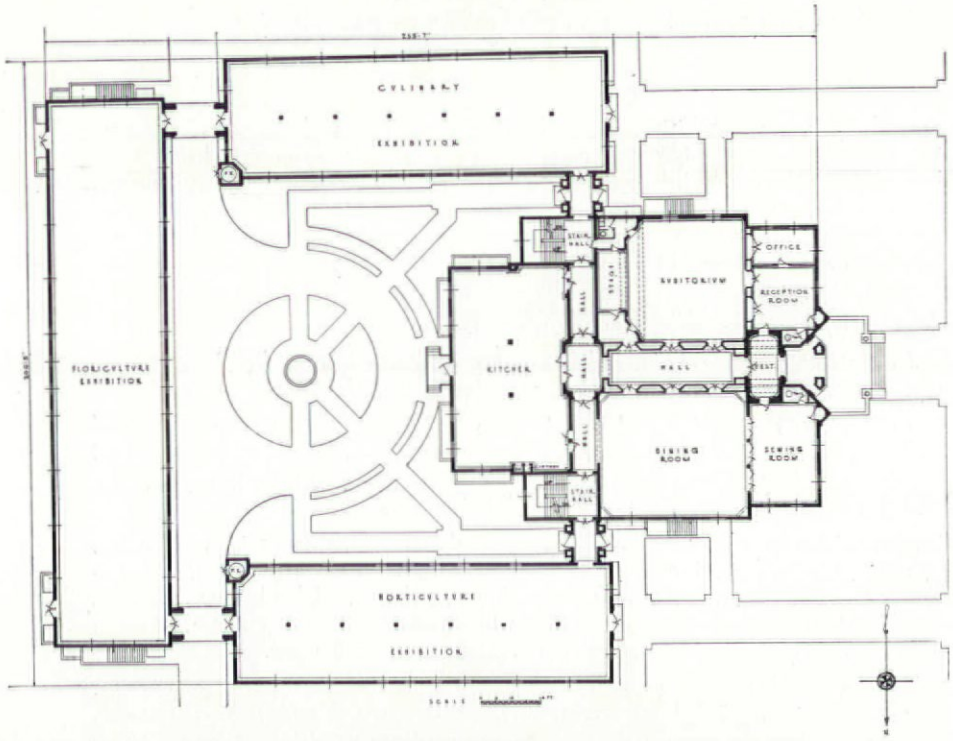
Special features: Combination auditorium, gymnasium and cooking class room. (Demonstrations made on the stage with movable range and sink.) Roof terraces and flower garden. Sewing room serves as overflow space for dining room when large dinners are served. Large public toilets in basement supervised by the domestic science school.

Cost data:
(Cubic contents, 742,300 cu. ft.)

General Work	$144,883.00	or $.19 per cu. ft.
Mechanical Work	50,189.00	or $.07 per cu. ft.
Total	$195,072.00	or $.26 per cu. ft.

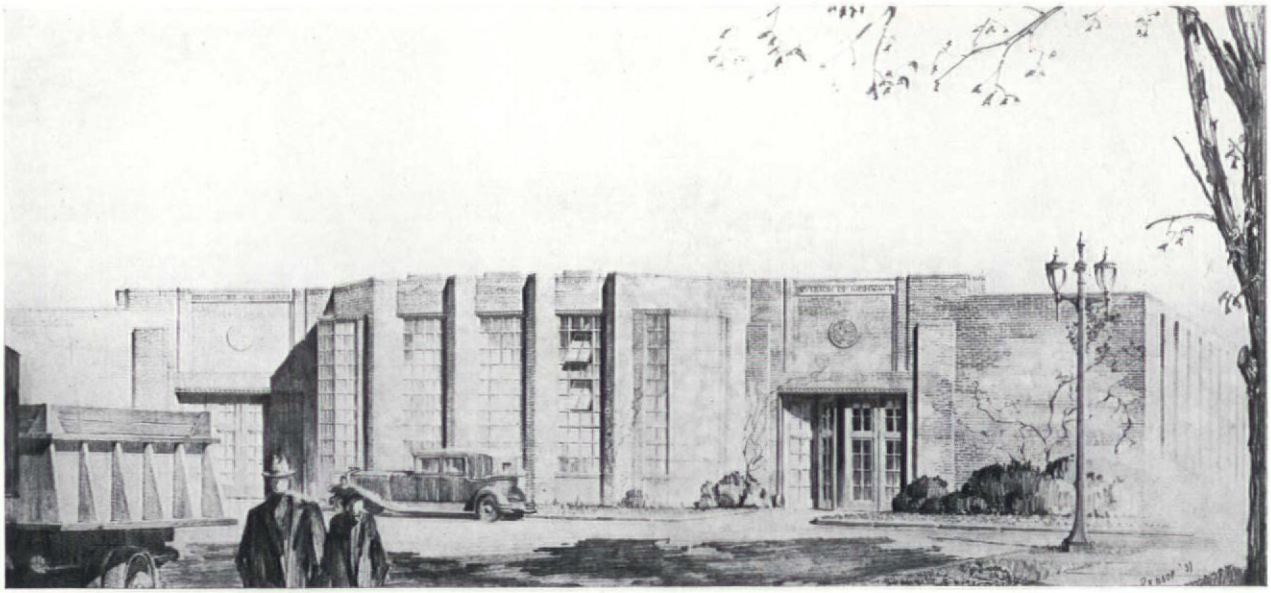


SECOND FLOOR PLAN

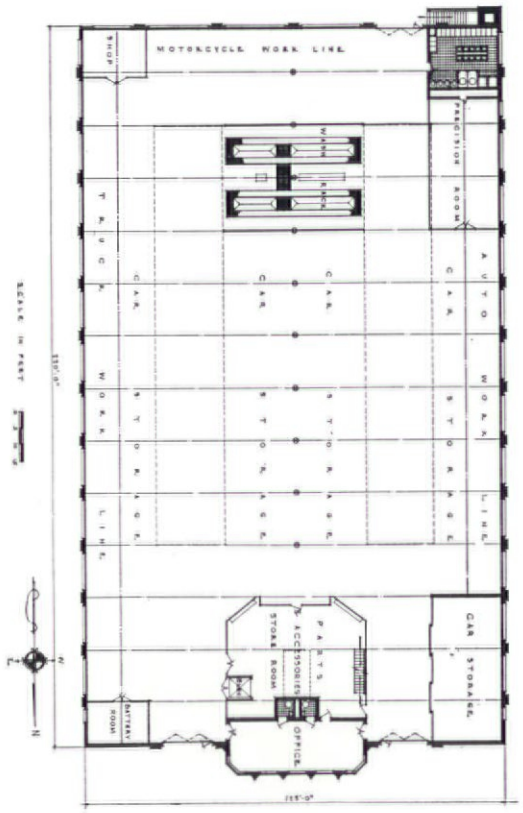


GROUND FLOOR PLAN

WOMEN'S BUILDING
STATE FAIR GROUNDS, SPRINGFIELD, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT



GARAGE BUILDING FOR DIVISION OF HIGHWAYS
SPRINGFIELD, ILLINOIS
C. HERRICK HAMMOND, SUPERVISING ARCHITECT



Purpose: To provide storage space and repairing facilities for the trucks and motorcycles of the Division of Highways. Space also required for the storage and repairing of tires, spare parts and an office for clerical help.

Site: Level ground on the outskirts of Springfield adjacent to railroad.

Type of construction: Brick walls. Steel trusses. Slow burning roof and monitor. Cement floor.

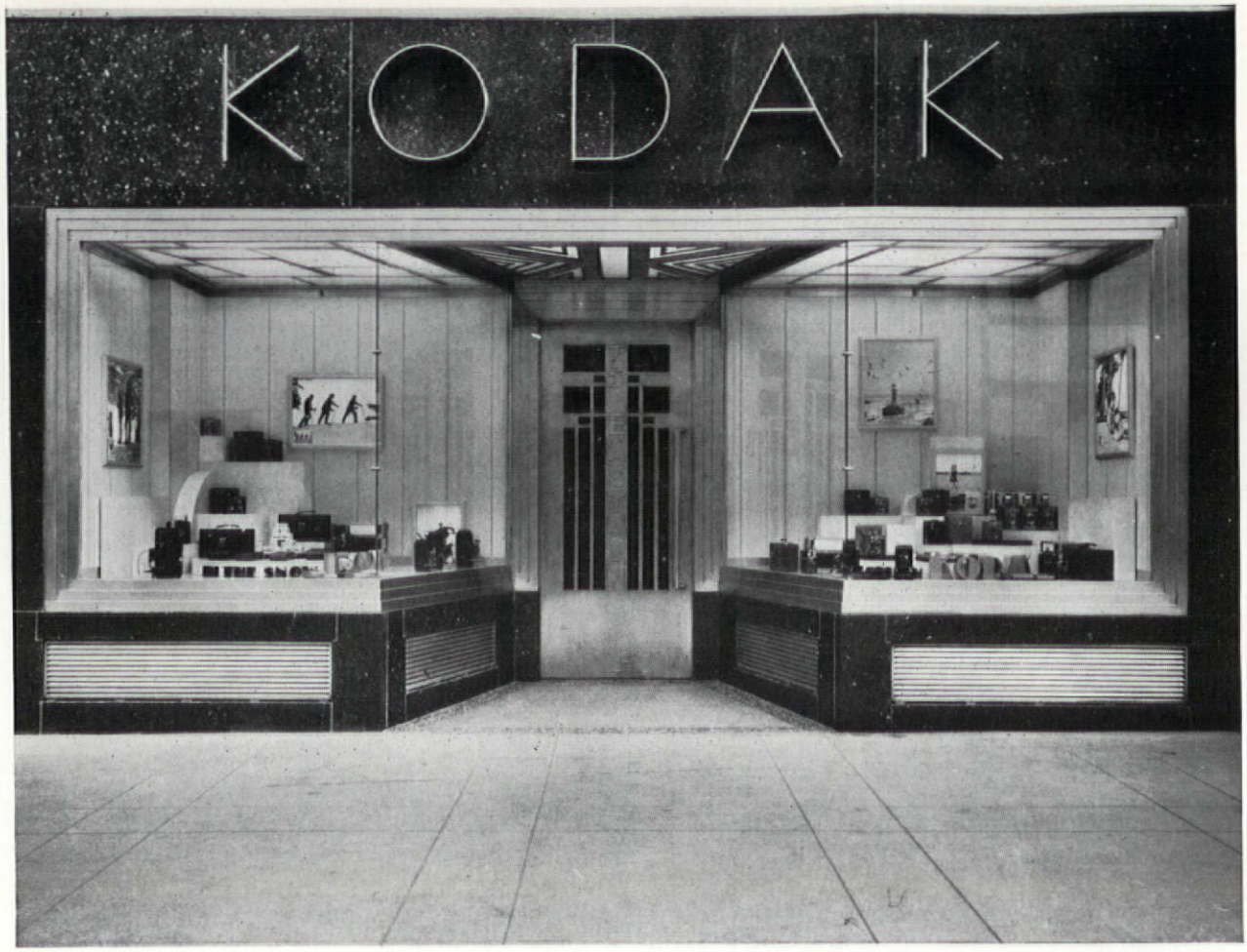
Exterior materials: Face brick. Stone trim. Steel sash.

Special features: Corner windows to allow a clear view to the clerk who will operate entrance doors.

Cost data:
(Cubic contents, 736,567 cu. ft.)

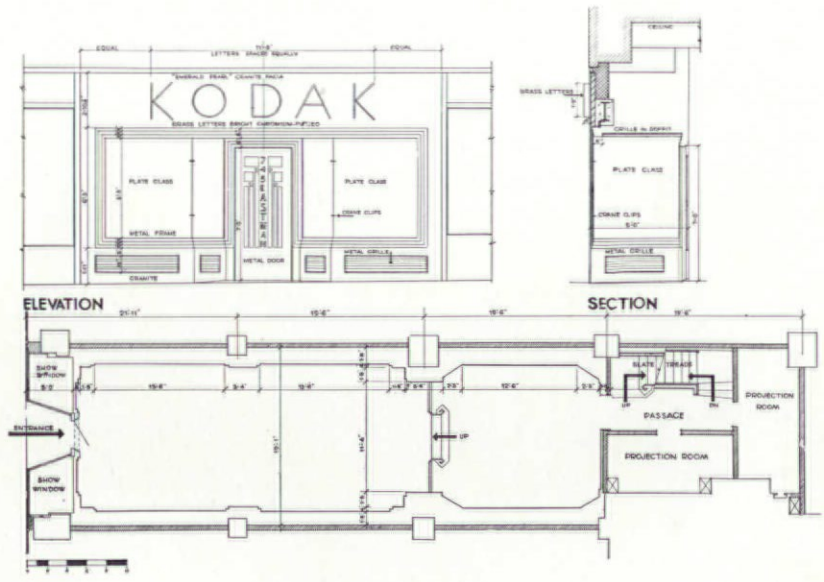
General Work.....	$60,432.00	or $.08 per cu. ft.
Mechanical Work.....	5,525.00	or $.01 per cu. ft.
Total.....	$65,957.00	or $.09 per cu. ft.

(These figures do not include the concrete floor.)



Gillies

EASTMAN KODAK SHOP, NEW YORK CITY
WALTER DORWIN TEAGUE, DESIGNER
R. B. SHERBURNE, ASSOCIATE



EASTMAN KODAK SHOP

745 FIFTH AVENUE, NEW YORK CITY

WALTER DORWIN TEAGUE, DESIGNER
R. B. SHERBURNE, ASSOCIATE

The Eastman designer, in charge of the styling of Kodaks, has had here the opportunity of designing a smart shop background for Kodaks on upper Fifth Avenue.

Exterior: Against the black granite facia is the name KODAK in ribbon lettering, three inches deep, cast in brass and brightly chrome-plated. The shop windows are low. The frame and glass setting are benedict metal. The display bases have been raised to a height convenient for the eye of the passerby. The woodwork is flush paneled with vertical chromium strips inlaid, lacquered white, and sprayed with a mist of silver, which gives a light neutral gray, an effective background for cameras and photographic enlargements. Movable geometric blocks, on which the merchandise is exhibited, permit rearrangement of the window displays. The name KODAK and other window signs are done in blocks as well.

The entrance is a one-piece door of benedict metal with pierced glass panel design. On its surface is applied raised vertical lettering, reading "745" and "EASTMAN".

Interior: Treated in silver, silver gray and black to form a neutral setting for the colorful merchandise.

The floor is composed of three-toned gray and black terrazzo in blocks of irregular pattern, separated by wide strips of benedict metal. The walls are wainscoted in English harewood of a very light silvery gray tone, built up with stiles and rails in diamond pattern paneling. A few severely simple pilasters are finished with capitals composed of horizontal fins of unpolished chrome plate. The fluted cornice and rectangular moldings have been applied in the same metal. Black *formica* has been employed as a base board.

The wall cases, like the show windows, have a background of silver mist. Above the wall cases are large photo-murals set in chrome frames.

Lighting: Indirect throughout. The shop window ceilings have glass members of irregular pattern with muntin bars of chrome plate. Inside, the fixtures are executed in polished chrome, those in the ceiling being simple rectangular boxes with sides and bottom of opal glass. The prisms for the wall lights were ground in the lens works of the Eastman Company. These prisms are placed vertically at intervals along the wall and framed in chrome-plated fixtures of simple design.

Cine-Kodak department: This is an octagonal room placed three steps below the front portion of the store. The furniture here is silver, and a rose colored rug introduces the only color to be seen anywhere in the background of the shop. Color is confined to the merchandise. The steps are black marble.

Projection rooms: Under the mezzanine, at the rear of the store, are two small rooms treated in rose and silver, with silver furniture, and specially designed lighting fixtures. Here amateur movie makers can view the running of their films in privacy and comfort.

Heating and ventilation: Air is taken through the decorative metal grilles under the shop windows, drawn to the basement where it is filtered, heated and returned after conditioning to suitably placed outlets. Thus the entire store, including even the small projection rooms, is supplied with fresh clean air at the desired temperature.

Gillies

EASTMAN KODAK SHOP, NEW YORK CITY
WALTER DORWIN TEAGUE, DESIGNER
R. B. SHERBURNE, ASSOCIATE

Gillies

EASTMAN KODAK SHOP, NEW YORK CITY
WALTER DORWIN TEAGUE, DESIGNER
R. B. SHERBURNE, ASSOCIATE

Mott Studios

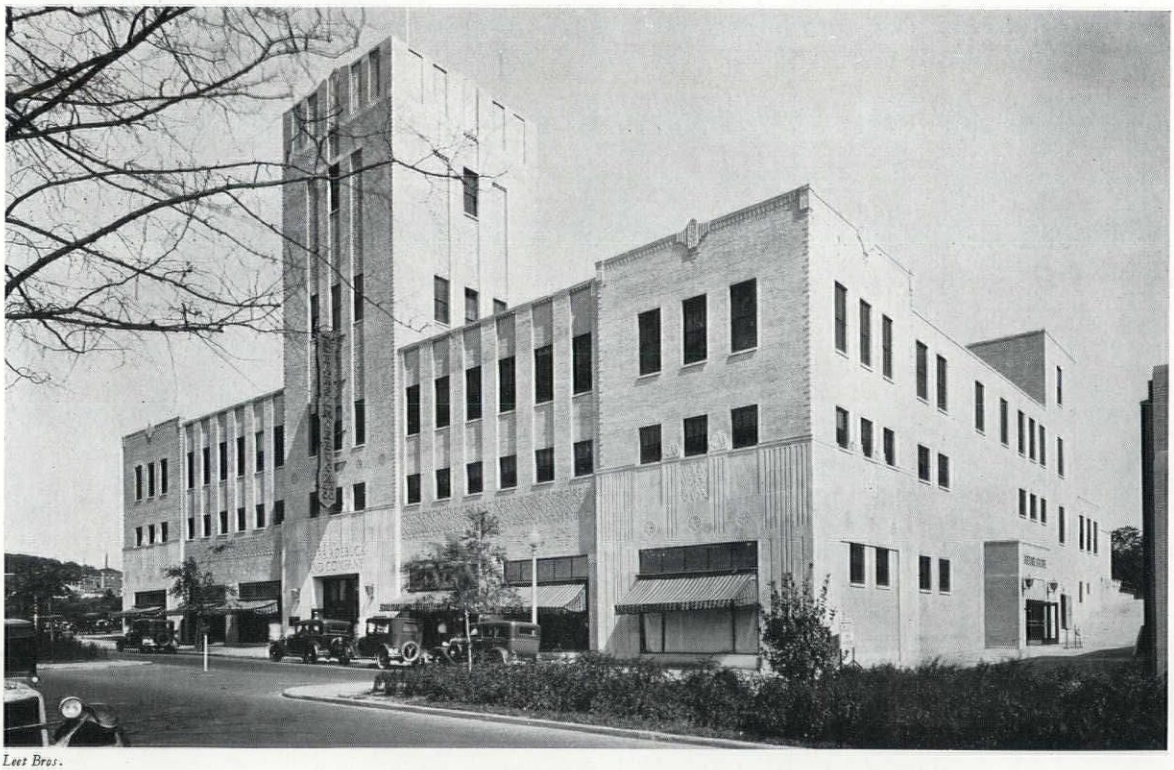
CRANE COMPANY SHOWROOMS, HOLLYWOOD, CALIF.
MORGAN, WALLS AND CLEMENTS, ARCHITECTS

Matt Studios

CRANE COMPANY SHOWROOMS, HOLLYWOOD, CALIF.
MORGAN, WALLS AND CLEMENTS, ARCHITECTS

Ducyer

LOS ANGELES



Leet Bros.

WASHINGTON, D. C.

SEARS, ROEBUCK AND CO. RETAIL STORES
NIMMONS, CARR AND WRIGHT, ARCHITECTS

CAMBRIDGE, MASSACHUSETTS

Starr, Inc.

BUFFALO, NEW YORK

SEARS, ROEBUCK AND CO. RETAIL STORES
NIMMONS, CARR AND WRIGHT, ARCHITECTS

NEWS IN BRIEF

BEAUX ARTS ARCHITECTS ON PILGRIMAGE TO ECOLE

A delegation of American architects, representing the Society of Beaux Arts Architects, sailed May 21 from New York en route to Paris.

The immediate purpose of the trip, according to Mr. Kenneth M. Murchison, who originated the idea, is to present to the *Ecole des Beaux Arts* a commemorative flagpole and base as a mark of appreciation from former students. The flagpole, designed by F. C. Hirons, architect, will be set in the courtyard of the *Ecole*. It is American-made, even to the French flag, and will be the only object in the courtyard which is not archaeological.

The S. S. "American Banker" of the United States Line has been chartered for the occasion and renamed the S. S. "American Architect." On the return trip the S. S. "American Farmer," Mr. Murchison announces, will be rechristened the S. S. "American Undertaker."

Official receptions await the architects. One will be held at the recently-opened Colonial Exposition.

Dreyer

MODEL OF FLAGPOLE BASE
FOR ECOLE DES BEAUX ARTS
FREDERIC C. HIRONS, ARCHITECT

The French architects are also reported preparing several parties in honor of their guests.

While in Paris the American architects will stay at the Hotel Madison, Place St. Germaine des Près, in the Latin Quarter. Between the hotel and the *Ecole* is the *Café des Deux Magots* which no architect has been known to pass without stopping.

In addition to Mr. Murchison, who is master of ceremonies, these architects are on the trip:

William F. Lamb, New York
William Van Alen, New York
Whitney Warren, New York
C. C. Zantzinger, Philadelphia
C. Howard Walker, Boston
Archibald M. Brown, New York
Ralph Gray, Boston
Arthur Ware, New York
Clinton Mackenzie, New York
J. Monroe Hewlett, New York
N. C. Wyeth, Washington
Frederick V. Murphy, Catholic University
C. Theodore Biswanger, Philadelphia
Louis La Beaume, St. Louis
William E. Parsons, Chicago
William W. Knowles, Long Island City
Francis Y. Joannes, New York
Henry H. Saylor, editor, *Architecture*
Henry C. Van Cleef, New York
Julian C. Levi, president, Architectural League, New York
Louis A. Walsh, Waterbury, Conn.
George I. Lovatt, Philadelphia
Walter E. Thomas, Philadelphia
Ely Jacques Kahn, New York
Frederic C. Hirons, New York
William H. Gompert, New York
James W. O'Connor, New York
John Tracey, New York
Louis E. Jallade, New York
Ethan Allan Dennison, New York
Hubert Ripley, Boston

Among others:

Ezra Winter, New York
George Wharton Edwards, Greenwich, Conn.
D. Putnam Brinley, New York
Tony Sarg, New York
Philip H. Chadbourn, New York
Arthur G. Covey, former president of the Society of Mural Decorators.
Peter Grimm, president of the Real Estate Board of New York.

The return ship leaves Cherbourg June 12 and is scheduled to arrive in New York June 20.

RADIO CITY OMITS OVAL BUILDING

Building plans filed for the construction of the Rockefeller Radio City show a change from the original model, as illustrated in the April issue of THE ARCHITECTURAL RECORD.

The oval structure, which has been greatly criticized, has been omitted and in its place appear two twin towers, six stories high, with a 60-foot walkway between them from Fifth Avenue to the new garden plaza.

The change is not necessarily final, Harvey Wiley Corbett, one of the architects for the project, pointed out in newspaper interviews. Nor has the change in plan been influenced in any way by the criticism directed against it, he said. The designers are working on new models and later studies may bring back the oval structure, although the twin tower scheme is said to promise greater financial returns.

The total cost of the four buildings for which plans have been filed with the Manhattan Bureau of Buildings is estimated at $26,500,000. Plans for the remaining buildings of the group are now being prepared.

MODEL PLAYGROUND

On property adjoining the site of a new high school at Englewood, N. J., will be developed, within the next five years, a model playground. The development will be under direction of the Russell Sage Foundation and the Playground Association of America.

CHICAGO PLANS COOPERATIVE OFFICE BUILDING

Plans have been completed by Granger and Bollenbacher, architects, for a 17-story cooperative office building on Michigan Avenue, in which each tenant will own his office space. Every fourth floor is reserved for future expansion. This building, comparable to the cooperative apartment house, is the first of its type to appear in Chicago. It has already been rented to the extent of 60 per cent.

COLOR LIGHTING IN THEATER

The new Earl Carroll Theater in New York City, now under construction, will have no lighting fixtures. All illumination will be indirect. There will be four complete lighting systems in the auditorium —white, blue, red and green.

The building has been designed by George Keister, architect, with Thomas W. Lamb as associate.

AUTOMATIC FIRE SKYLIGHT

The New York Fire Department has developed a skylight which opens automatically in case of fire, allowing the flames rising through shafts to escape out into the air. Flames go upward whenever they can. Any obstruction causes them to spread sidewise. For this reason firemen always first chop open the roof to draw off the gas and heat, and thus slow up the fire. The automatic skylight does this task before the department arrives.

THE 64th CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS

Those who attended the sixty-fourth annual convention of the American Institute of Architects, held at San Antonio, Texas, during the third week of April, returned with the conviction that the Convention had been a distinct success. When it was decided to hold the Convention in San Antonio the architects in Texas asked the Board of Directors that this Convention should be a practical one. And this it proved to be, which was a pleasant surprise to many who had anticipated, in view of the business depression, that little of practical value would be accomplished.

But whether or not the crisis served as a spur to action, or whether it was due to the fact that this Convention was mainly one of younger members of the Institute, many of whom came from the smaller cities and towns, and who are apt to be more intimately interested in the practical problems affecting professional practice than are the more specialized architects of the large cities—in any case, there was evident a new spirit; a desire to take practical steps to shoulder the responsibilities of leadership in the profession, in active cooperation with other interests of the building industry. To many delegates this was a welcome change from previous Institute conventions. Often in the past there were complaints of the meetings being somewhat too formal, too much given over to generalizing about art, and too indifferent to the basic changes in economic and social currents; changes which, in the minds of many observers, bid fair to affect profoundly the building industry as they have affected other industries of the nation in recent years. Along with any prospective changes in the building industry, we must expect, of course, similar changes in the practice of architecture.

Two matters of direct practical interest to the profession, especially, occupied the attention of the Convention. These were the need of securing universal and uniform registration laws for architects throughout the states; and the necessity of united action on the part of the profession to secure the allotment of the designing of public buildings in the national government's huge building program

among the best qualified architects in practice in districts where the buildings are to be built.

On the subject of the state registration laws it was felt that in most cases these laws have clearly attained their original purpose of providing a form of protection to the public, to the building industry, and to the profession, against the havoc wrought by incompetent practitioners. Such laws are now in force in thirty-one states, and in most cases they are as satisfactory as could be expected. But in some states these laws are altogether too lenient, permitting the registration of undesirables. The sentiment of the Convention as expressed on the floor as well as in the report of the Board of Directors clearly showed that all possible pressure should be brought to secure uniform registration laws in every state. Such a benefit to the profession as well as to the community at large can only be obtained by concerted action of all architectural organizations aided by other state and national organizations of the building industry, and in particular the Building Congresses and the Real Estate Boards. Also, every effort should be made to have these laws uniform both as to standards and, as far as possible, in form.

Regarding the situation in the office of the Supervising Architect of the United States Treasury Department, which has occupied the attention of a large section of the profession during the past year, a spirited and well attended evening session was held on the first day of the Convention. This meeting, in charge of Mr. Arthur Wallace Rice of Boston, brought out the facts of the case. The delegates expressed a determination to take united action to at least curtail, and if possible to stop, the rapidly growing tendency on the part of the government to encroach upon the field of the private practice of architecture. It appears that the Supervising Architect's Office at Washington has grown in astonishing fashion, until it now numbers more than 1100 architects and draftsmen, several hundred of whom have been added to the organization within a year. The Treasury Department claims that, with this force, it can design government postoffices and other buildings more efficiently and for less money than can the best private practitioners. Exception is made in the case of the largest structures—those costing a million dollars or more. Delegates offered evidence to show that the claim of the Supervising Architect's Office to superior professional competence in design and superintendence was not sustained. Mr. Horace Peaslee of Washington, Second Vice-President of the Institute, stated that he had been asked to certify to the competency of certain candidates for positions as architects in the government office—as full-fledged architects in practically complete charge of a specific building. Some of these architects he knew personally were not competent. Nevertheless they had been accepted for those positions. The Treasury Department's claim of saving money on the cost of architect's fees was also challenged. It was the sentiment of the Convention that the government should not invade the field of private practice; that necessarily a government bureau could not be as progressive in responding to the requirements of the rapidly evolving profession which architecture has today become; and, finally, that it could not, in designing a building, take account of climatic variations, local requirements, and of the needs and opportunities in the building industry, to anywhere near the same extent that could the experienced local architect. This sentiment of the Convention found expression in a resolution offered by Mr. Albert L. Brockway of Syracuse, New York, urging the Institute, through its Committee on Public Works, to press its efforts to improve the situation as it today exists in the Treasury Department.

As sidelights on this question of the government attempting to practice architecture, it was brought out that there was not the same unfortunate situation in the case of states, counties and cities. With one or two exceptions like New York State and the New York City schools, generally throughout the country the designing of state and municipal buildings is in the hands of private architects. The suggestion was also made that in the national government a Department of Public Works be organized with a Secretary in the Cabinet and an Undersecretary, who should be an architect in charge of the supervision of buildings, but not in charge of their design.

There were other interesting subjects discussed by the Convention. The Growing Scope of the Architect's Function, and Newer Aspects of Land and Building Development were two topics that provoked fruitful discussion. The appearance on the floor of the Convention of the President of the General Contractors' Association, Mr. A. P. Greensfelder of St. Louis; of a representative realtor, Mr. Hugh Potter of Houston, Texas; and of Mr. Thomas S. Holden, economist and Vice-President of F. W. Dodge Corporation—each with important contributions to the solution of the problems confronting the architect and with the promise of cooperation with the building industry—was a new note in the American Institute of Architects' conventions. Other interesting achievements, combined with the delightful hospitality of the architects of the West Texas Chapter and the citizens of San Antonio, will make this gathering of the Institute memorable. It was a happy ending to the first year of the presidency of Mr. Robert D. Kohn of New York, who was reelected to succeed himself for a second year as head of the American Institute of Architects.

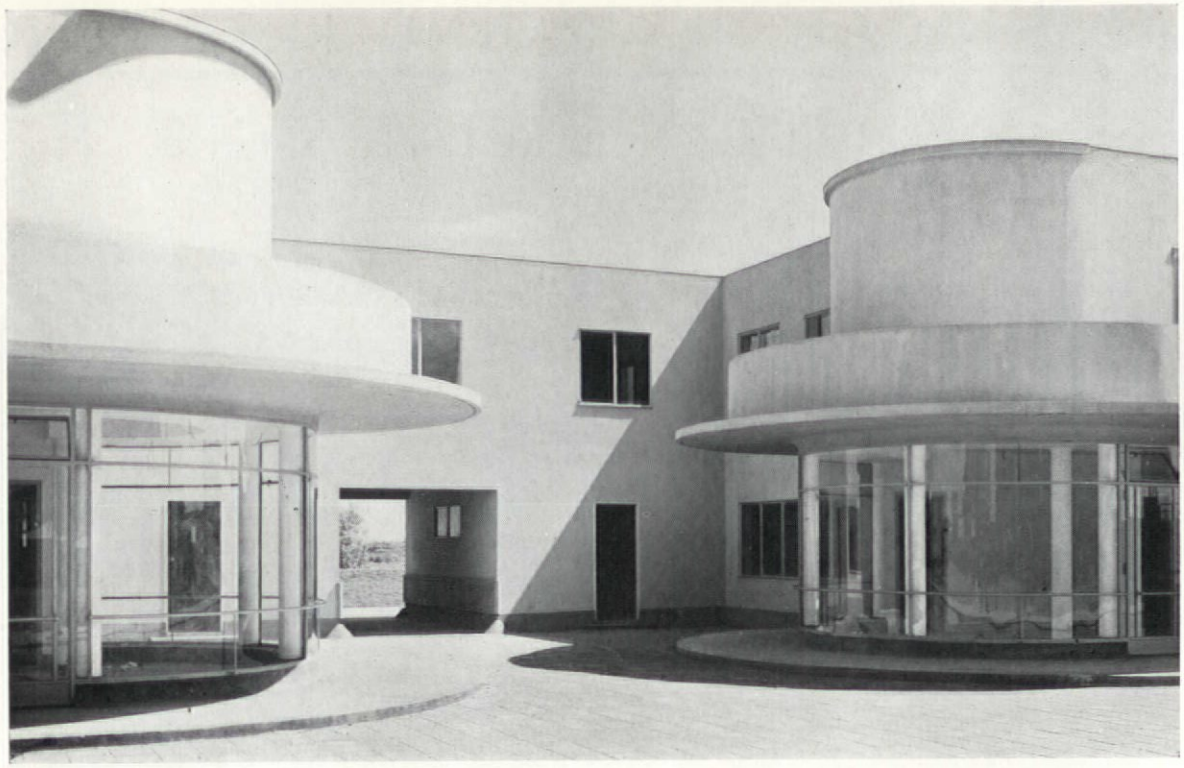
PARKER MORSE HOOPER.

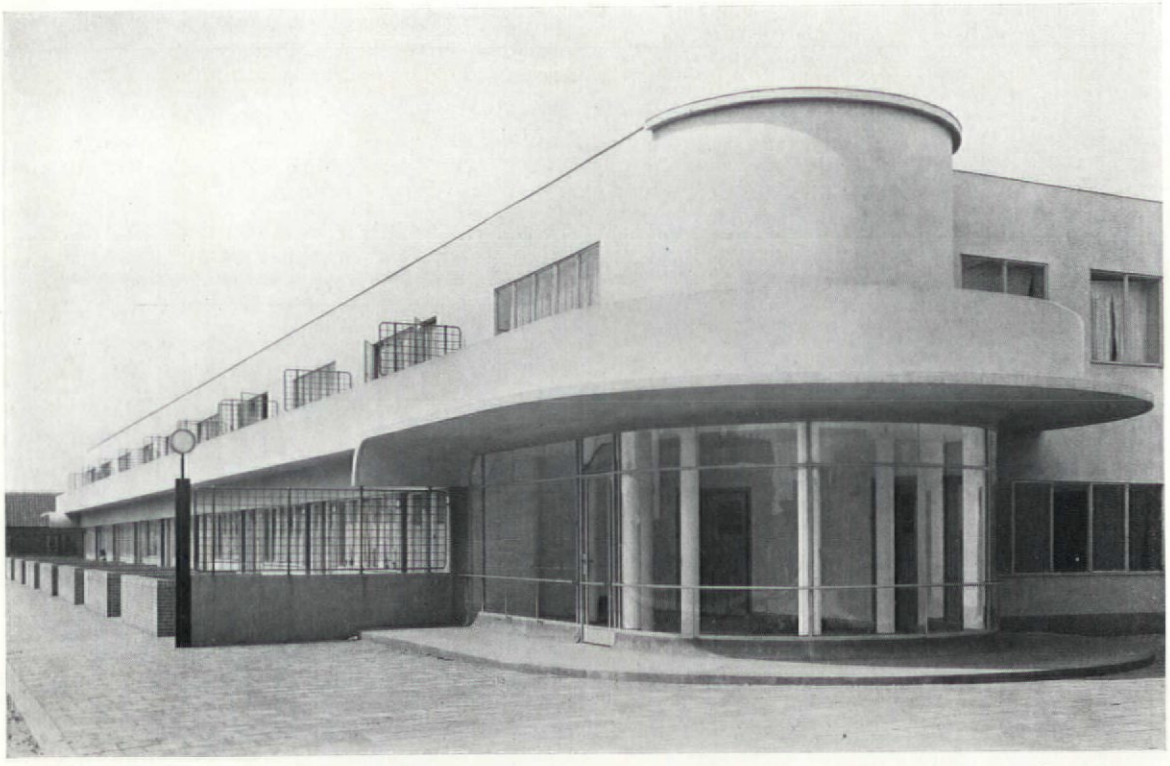
TECHNICAL NEWS AND RESEARCH

PLANNING THE RETAIL STORE

By K. LÖNBERG-HOLM

NEIGHBORHOOD STORE, HOEK VAN HOLLAND, J. J. P. OUD, ARCHITECT





NEIGHBORHOOD STORES, HOEK VAN HOLLAND, J. J. P. OUD, ARCHITECT

The circular plan and the use of plate glass insure visibility from the street and contact between shopper and merchandise.

PLANNING THE RETAIL STORE

By K. LÖNBERG-HOLM

Function: The retail store is an outlet unit for distribution of commodities. It should provide accommodations for receiving, storing and selling merchandise, and for administration and human comfort. The goods should move through the store with a minimum of friction in a minimum of time.

Trends in retailing: The shift from agricultural to industrial pursuits, mass production, standardization and women's occupation in business, industry and professions has caused a withdrawal of women from preparation of commodities. The decrease in size of the average family and the increase in number of families living in multi-family dwellings means less cooking, baking and storage space. The hand-to-mouth housekeeper buys cans and packages in sizes and weights adapted to her particular compressed needs. The tendency is toward a more diversified diet determined by emphasis on health.

Studies show that women buy from 50 to 80 per cent of all goods sold at retail. The woman buyer is a shopper. The automobile, the motion picture, the telephone, the radio, and the printed page have changed the scale of time and distance in retailing. With good roads and adequate transportation the shopper can exercise a free choice in selecting a place in which to buy. Women search about and visit store after store before purchasing. They often divide their purchases among two or more stores.

Space requirements vary with the given conditions. The age of too definite specialization is passing. The trend is toward larger stores handling a full line of commodities. With the development of refrigeration units, centralized meat-cutting plants, quick frozen and packaged meat, and adequate transportation facilities for delivery, the grocery system is swinging to the complete food market with soda fountain, lunch counter, meat, fruit, delicatessen, bakery, household products, tobacco, etc. Drugs constitute only a minor part of the sales of a drug-store. Cigar stores are introducing refreshment counters.

The type of service varies from credit-delivery to cash-and-carry, and from cafeteria self-service to semi-self-service and full service. No attempt will be made in this article to differentiate between chains, independent, and cooperative stores, or to deal with the related problems of distribution from producer to retail outlet. Department stores and specialty shops will not be included. (See *Store Buildings*, THE ARCHITECTURAL RECORD, June, 1929.)

Waste in distribution: Although costs of production have been continually lowered, costs of distribution have been increasing. "The waste in *physical distribution* alone has been estimated by several competent groups at not less than $3,000,000,000 a year. This includes the wastes of time, labor, and material in the multifarious operations that take place after a product leaves the final machine or process in a factory, and before it is in the hands of the final consumer ready to be used. . . . A recent survey of distribution cost of twenty staple commodities indicated that freight charges amounted to only 10 per cent of the total, whereas packing, handling, loading, unloading, rehandling, each often repeated several times, accounted for the other 90 per cent."*

Research work: The U. S. Department of Commerce, chains, wholesale, and retail associations are conducting surveys of retail merchandising conditions in order to find the points along the line of distribution at which substantial economies can be effected. Model stores have been set up in a number of cities as being suggestive of ideal arrangement to merchants. Plans of model stores can be obtained from the agencies listed at the end of this article.

Each store and each line of stores represents individual problems, but general principles for the arrangement of many types of retail outlets have been established. Improved layouts have reduced retailing expenses by increasing the rate of turnover and reducing labor and overhead. Those general principles which affect the physical characteristics of the store—*open display*, *self-service*, *departmentizing*—have been used to establish the following criteria for the store.

Physical criteria:

Maximum organic relation to community.
Maximum sensory contact between shopper and merchandise.
Maximum ease of sales transaction.
Maximum physical comfort.
Maximum flexibility.
Minimum cost of construction, maintenance and operation.

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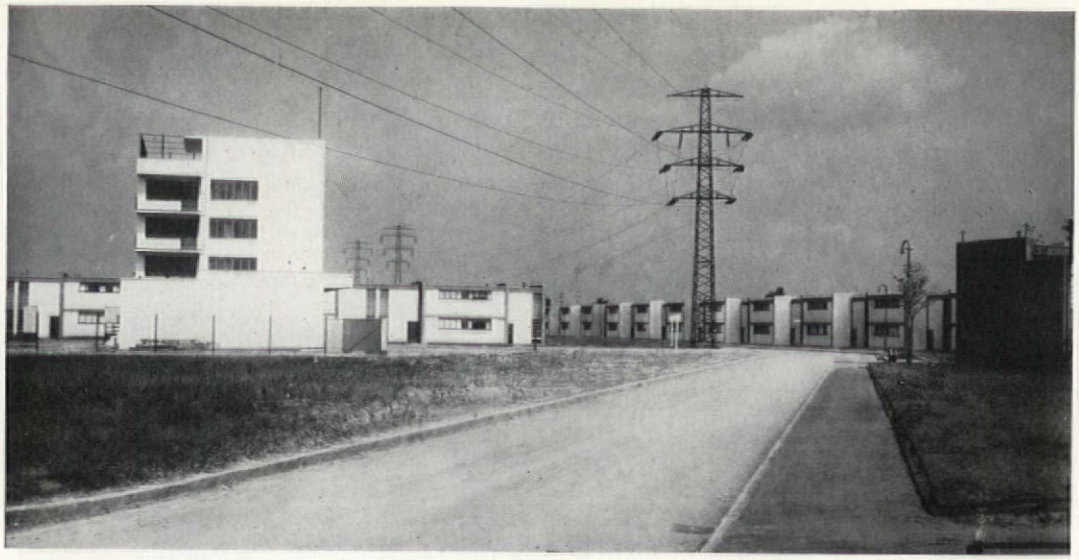
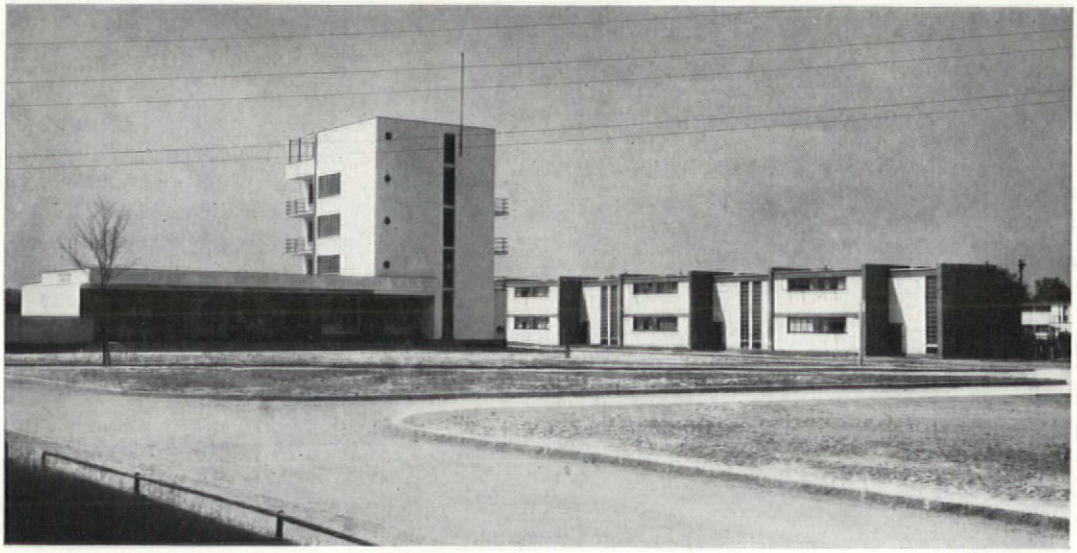
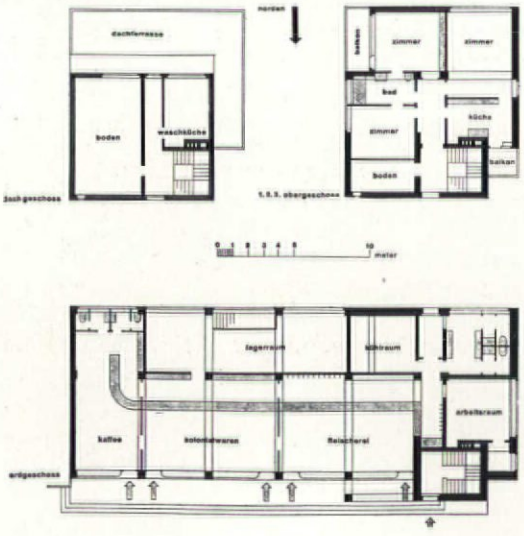
*"Simplification as a Basic Principle of Sound Merchandising." By W. E. Braithwaite, Chief, Division of Simplified Practice, U. S. Bureau of Standards. National Grocers Bulletin, Special Convention Edition, 1930.







COOPERATIVE STORE, DESSAU-TÖRTEN
WALTER GROPIUS, ARCHITECT

The store is built as part of a housing development. Meat, grocery, coffee and tobacco departments have separate entrances and are divided by glass partitions. Toilets for shoppers and employes, storage and office at the rear. Living quarters for the store keeper are provided in the adjoining structure.

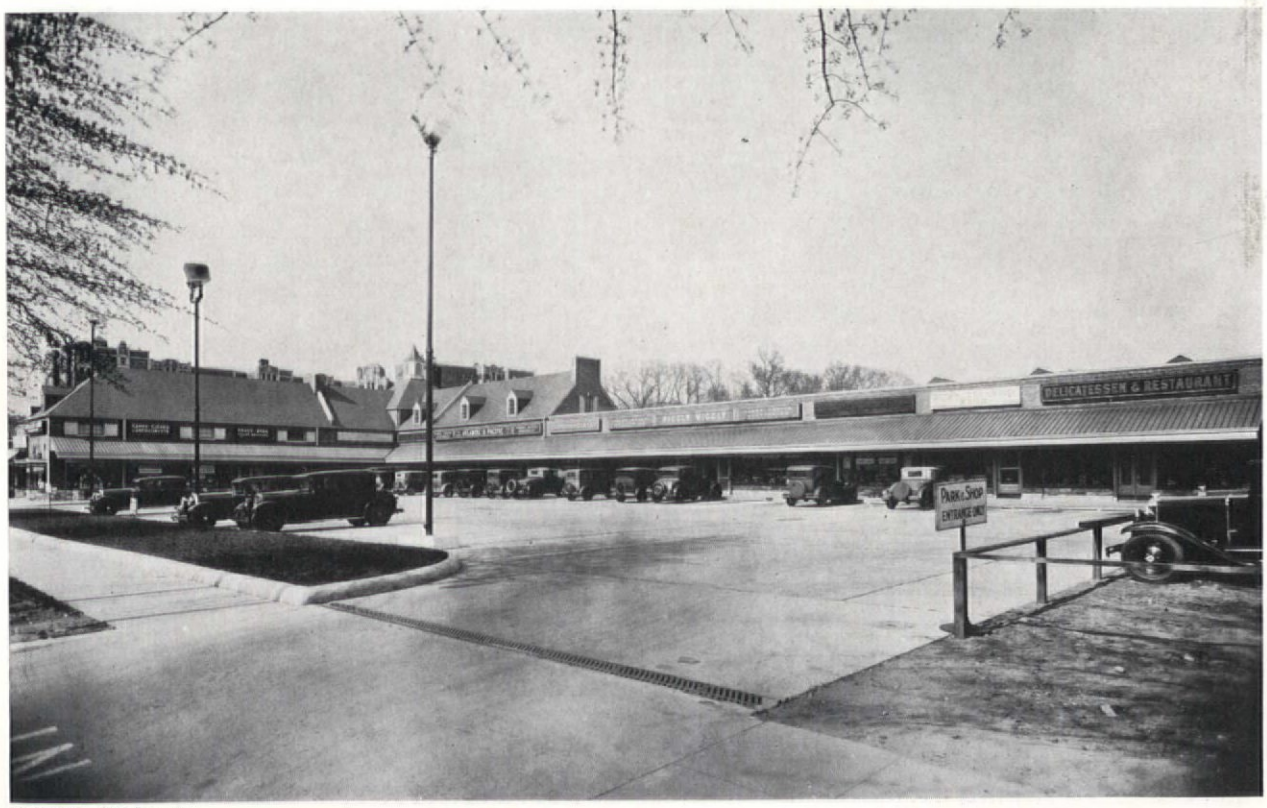
LOCATION

The more convenient and accessible the store is to the public the better it is. Each problem of location requires separate study in the light of its particular circumstances, the character of the goods, the class of trade catered to, the nature of the neighborhood and other existing conditions. The opening of a new store should be preceded by a study of all available statistics pertaining to the trade area, increase in population, estimated payroll, types of industries, number of existing retail outlets, density and nature of traffic, whether pedestrian or vehicular, male or female, shifting of retail trade area, parking facilities, relation of rent to estimated sale, etc. There is a trend from main shopping areas to secondary business districts and neighborhood stores, not only in larger cities but in smaller communities as well. Traffic congestion is becoming so serious in downtown areas that women find it more convenient and comfortable to shop in the neighborhood center. Rising rentals in downtown areas and the limitations of small selling space and fronts restricted to from 10 to 20 feet make the necessary sales volume impossible. Charging the rent of "key-locations" to advertising has not proven sound business.*

Community shopping centers: The introduction of retail stores in buildings of unrelated purpose is in most cases caused by the inflated land values of the present economic system. The narrow store front and the depth of the selling space of the typical city store are opposed to the principles of economic retailing. The store front becomes a display case that completely screens the store and acts as a barrier between shopper and merchandise. Artificial illumination and ventilation have to be employed all year round at all times of the day.

The design of community shopping centers offers new problems to the community planner and architect. The store buildings should be designed to serve the purpose of retailing only. Studies should be conducted to establish geographical and physical relations of the retail outlet units to the community. The shopping center should be readily accessible to automobile shoppers in large numbers. Parking space or garage facilities should be provided. Filling stations, rest rooms, amusement and news centers and restaurants should be part of the development or adjacent thereto.

**Good-bye to the Chain Store "Advertising" Location* by Herschel Deutsch, ADVERTISING AND SELLING, March 18, 1931.

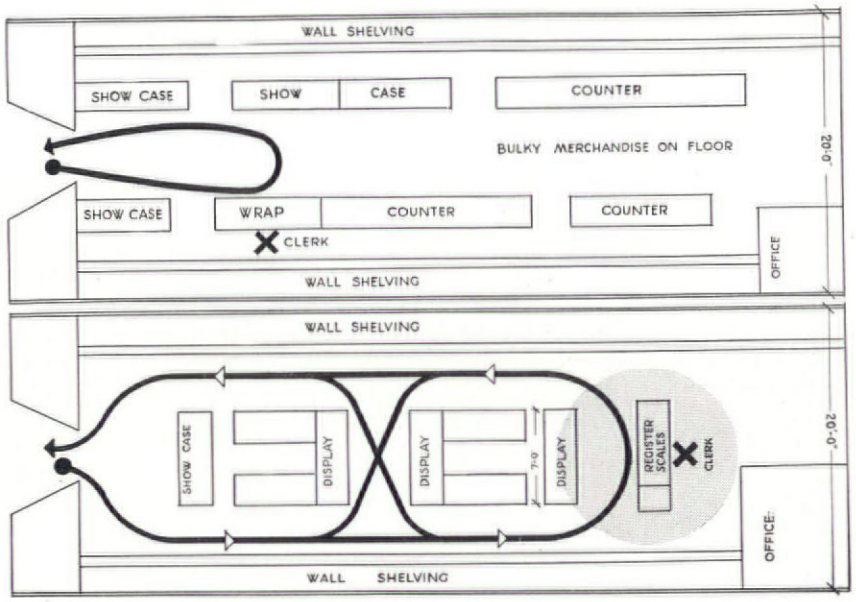


Underwood and Underwood

"PARK AND SHOP STORES", WASHINGTON, D. C.

COOPERATIVE STORE, STOCKHOLM
DESIGNED BY THE ARCHITECTURAL OFFICE OF KOOPERATIVA FÖRBUNDET, SWEDEN

The columns are recessed to permit an uninterrupted plate glass front. The whole interior is visible from the street. The platform is determined by the steep slope of the street. Neon tube sign.



The store above (old arrangement) has long counters that separate shopper from merchandise, about half of which cannot be seen. The shopper stops near the entrance while the clerk assembles her order. In the new arrangement (below) the counters have been opened and the center of activity moved to the rear. The equipment has been arranged in islands and most of the merchandise can be seen and handled. ("Modern Hardware Store," Dipman.).

LAYOUT

Signs: Signs should be used to announce the shopping center, the shops, and the line of merchandise. The effectiveness of a sign is determined by the traffic it commands. Legibility area, not visibility area, is important. See *The Gasoline Filling and Serving Station*, The Architectural Record, June, 1930.

Open display: The shopper makes her first contact with the merchandise through sight. Sight is especially valuable in impulse merchandising. Manufacturers and dealers are stressing the value of visual appeal for all commodities. Many analyses have established the fact that the show window of the average retail store is directly responsible for one-third of the total sales. An example of one of these tests where a merchant boarded up his windows for a while and then compared sales and profit figures is given below. This merchant found that his sales volume dropped 25 per cent and his profits 33⅓ per cent. The particular items:

Candy dropped 32 per cent.
Sodas dropped 14 per cent.
Specialties dropped 41 per cent.
Prescriptions dropped 2 per cent.
Stationery dropped 10 per cent.
Toiletries dropped 18 per cent.

The loss was heaviest in the more profitable specialties, and the figures confirm general experience that one-third of the profit for retail stores should be charged to window display space. (Windows represent from 12 to 14 per cent of the total rent charge.)

The principles of *open display* are based on these facts. The whole selling space is made display space. Everything which the store sells that has visual or tactual appeal is stocked so that it can be seen by the shopper and handled so far as sanitation and practicability permits. Merchandise that cannot be handled is displayed under glass. High priced or breakable merchandise is displayed out of reach of the shopper. Women want to see what the store has to sell. They want, further, to handle each article. Goods sell more rapidly when the shopper inspects them closely. If part of the merchandise must be stocked out of sight, it should be those goods the customer most frequently buys. Owners of open display stores are reported to agree that theft is negligible in comparison to increased sales, i.e., increased rate of turnover.

Maximum sensory contact is effected by increasing the area of display and customer circulation. Instead of using counters arranged to keep the customers away from merchandise stocked in bulk, the whole floor is thrown open to the customer. Open display tables replace the counters and showcases. Wall shelving should not be over 6 feet high.

STANDARD COOPERATIVE STORE FOR SMALL COMMUNITIES
DESIGNED BY THE ARCHITECTURAL OFFICE OF KOOPERATIVA FÖRBUNDET, SWEDEN

INTERIOR OF STORE SHOWN ON PAGE 500
DESIGNED BY THE ARCHITECTURAL OFFICE OF KOOPERATIVA FÖRBUNDET, SWEDEN

The selling space is shallow and wide to insure daylighting and visibility from street. Meat and grocery departments are divided by a plate glass partition. Rubber flooring, chromium-plated fixtures, columns and doorframes.

Visibility: The best store front is no front. The store itself is the best display window. Groceries, hardware stores, drygoods stores, bookstores, and furniture stores have eliminated with advantage display windows with high backgrounds and made the whole store visible from the street. The prevalence of window and automobile shopping demands immediate unobstructed view of the interior. Plate glass fronts should therefore be as wide as possible without horizontal or vertical structural members, utilizing metal clip construction for corners. Where climatic conditions and the nature of the merchandise permit, the glass front can be eliminated entirely or made folding, cantilevered, or vertically sliding. The glass should extend as far down as practical, protected with kickplates, rails or curbs, permitting flexibility in window display. The selling space should be open to view above a height of three to four feet. The clerks should be able to see the entire length and width of the room from any position. The shopper should be able to see the goods displayed from any point of the room.

All parts of the selling space, especially the *center of activity*, often located in the rear of the store, should be well lighted, full advantage being taken of natural lighting. (See LIGHTING.) All materials and colors should be selected with regard to their light-reflecting properties. Attention is called to a more extended use of structural and prismatic glass.

Reflections in the plate glass produced by daylight (especially bright sunshine) can be neutralized by proper lighting of the background or the store (see LIGHTING), by the use of awnings and canopies, and by placing the glass normal to the lines of vision. The temperature inside the glass front should be about the same as the temperature outside to prevent steaming and frosting on the glass. The most common causes for steaming and frosting are radiators placed too near the back of the window without proper insulation, basement-heating devices underneath the window, high-powered batteries of illuminating devices improperly ventilated and heating the glass faster than it can be cooled, and window trimming blocking ventilators.

Display facilities: A store sells merchandise, not architecture and equipment. The design of the store and the display equipment should be subordinated entirely to the purpose of displaying merchandise to its best advantage. Self-expression, monumental and picturesque efforts are out of place.

Open display should be placed on levels that equally facilitate visual and tactual contact. Standardized metal equipment for display of various lines of merchandise is on the market. It should be light and easy to move around. Impulse merchandise that cannot be handled and that is displayed to attract attention should be located in the lines of vision of the shopper or passer-by. Display cases should be placed so as not to obstruct the view of the store. The design of glass display cases and windows and the height of the display level above the floor is determined by the nature of the merchandise. (Show window platforms for grocery stores are usually from 20 to 28 inches off the sidewalk; for shoe stores from 12 to 16 inches. Furniture stores, automobile showrooms, and kindred stores have their show window platform practically on the street level.) Open and enclosed display islands can be used to break up the store front leading the shopper into the store through a space from which he can view the merchandise without interference from traffic. Display islands should be placed with the displays normal to the lines of vision.

All display equipment should be movable or flexible to satisfy varying conditions and varying levels of display. The more levels are brought into play, the more spatial limitations can be overcome. The floor back of the window can be divided into sections that can be raised and lowered to desired heights by mechanical devices. Display windows are made with adjustable sides, background and ceiling. Display platforms can be made revolving. Dumbwaiters and trapdoors to basement may facilitate the changing of display. Bulkheads should be removable.

Colors should be used to focus attention on the merchandise. Neutral colors or white should be used in stores with a variety of merchandise or frequent changes in display. Butcher shops are using green colors to bring out the reds of the meat.

Television, radio and movies showing fabrication and use of the merchandise might be incorporated in the stores of the near future.

Certain lines of merchandise should be protected by awnings from the direct rays of the sun.

Access and store circulation: The selling space should be as accessible as possible. The store should be on the street level with access removed from lines of street traffic. Doors should be easily operated and at least 3 ft. 6 in. wide; 4 ft. is recommended. Attention is called to the use of automatic door openers with photo-electric cell control. Larger stores should have separate doors for access and egress, or separate doors for each aisle. Center entrance is most desirable for smaller stores. Side entrances are generally objectionable.

The arrangement of the selling space should insure free, easy distribution of traffic. Cross traffic should be avoided. The aisles should be ample. Most new stores use two aisles instead of one center aisle. Neon signs can be used to identify the various departments.

Self-service: With stock openly displayed, weighed, measured, done up in packages and plainly priced, the logical procedure is to select articles without

COOPERATIVE STORE, STOCKHOLM
DESIGNED BY THE ARCHITECTURAL OFFICE OF KOOPERATIVA FÖRBUNDET, SWEDEN

Self-service is not used in this store, but all goods are displayed to their advantage on a sanitary background of glazed tiles, marble, plate glass and chromium-plated metal.

the assistance of a clerk. Most women inspect more leisurely and buy more quickly with less clerk attendance. Wrapping and counting counters are provided at proper intervals. The advantages of self-service are reduced customer waits, handling of peak hours with convenience to the shopper, handling of larger volume of sales within a given time, and reduced movement on the part of clerks.

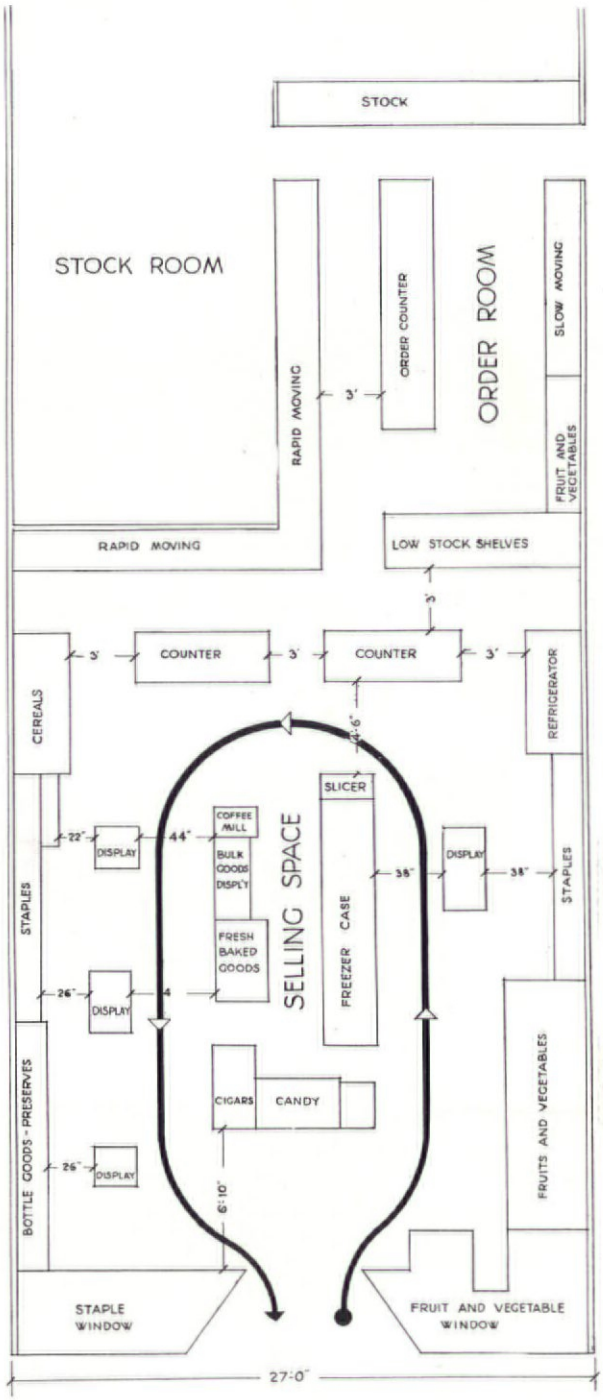
A grocery store without self-service doing $100,000 a year will required from three to seven clerks. It is claimed that on a self-service basis the number can be reduced to one seller of shopping goods and one or two wrappers and sellers. The degree of self-service varies from stores with automatic dispensing machines over self-service cafeteria systems to semi-self-service, where customers serve themselves with everything except bulk goods and those commodities which cannot be handled.

Departmentizing: Articles of related nature are placed in adjacent displays to facilitate easy orientation. Demand goods are generally placed in the rear of the store with the wrapping counter—the center of activity—as close at hand as possible. Little time and few steps are required in serving the customer. Impulse merchandise is usually pick-up goods that require display to call them to the attention of the shopper. They are placed towards the front of the selling space. By placing demand goods in the rear the shopper coming into the store is drawn past the impulse goods and passes this type of merchandise on the way out.

Circulation is controlled through the position of display equipment. If it is desirable to have the shopper turn to the right on entering, a wider aisle is placed to the right as people usually follow the widest space offered. By placing the wrapping counter and register to the left, the customer will take the aisle to the left on leaving the counter. Thus the two main aisles are traversed. For shops with complete self-service the circulation is guided toward the cash register at the exit door. Open island display insures maximum circulation, widens the aisles and reduces congestion. Departmentizing tends to preclude accumulation of goods that will not sell and assures easy control of stock. Goods are in full view; if an article does not sell the fact becomes readily apparent.

Size and shape of selling space: Compactness of selling space is essential for ease of operation. Window and automobile shopping demands stores with maximum extension parallel to the lines of street traffic or of island type. The store should not be too deep. People will walk up to 60 feet if conditions otherwise are favorable and the back of the store is sufficiently lighted.

The following dimensions are used only as an illustration. Grocery stores with a selling space



Plan for a model store utilizing self-service, prepared by THE PROGRESSIVE GROCER. The plan shows relation between selling space, order room and storage and location of merchandise. The display islands control circulation. Demand goods are placed in the rear.

NEIGHBORHOOD STORES, ROTTERDAM, J. J. P. OUD, ARCHITECT

The stores are part of a city housing development for minimum size dwellings shown on the opposite page.

20 to 30 feet wide and a depth of not more than 40 feet have ample space for a business of $100,000 and up annually.

Storage, delivery and office: All delivery activities should be removed from the selling space. Small stores handle delivery orders from the counter where the telephone should be placed. Larger stores have separate order rooms adjacent to counter and storage. If trucks are used for delivery, garage space should be provided adjacent to the order room, with loading platforms for receiving and delivery.

Storage requirements vary. The store is no longer a warehouse. The trend is towards the display of all goods to increase the rate of turnover.

Conveniences: Seats for shoppers, counter space or table tops for self-serving customers, toilets, lavatories, rest rooms, drinking fountains, telephone booths, and lockers should be provided according to specific conditions.

CONSTRUCTION AND MECHANICAL EQUIPMENT

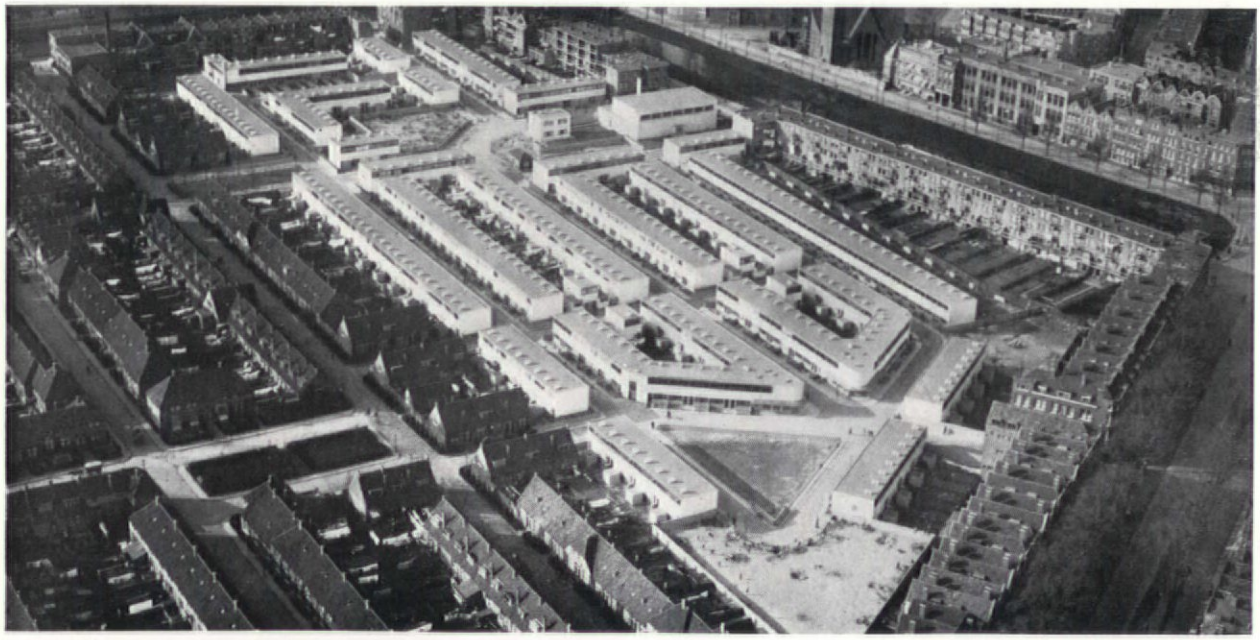
Flexibility: The structure for a shopping center should easily accommodate varying requirements for different types of stores, changes in store layout to meet new conditions and store extension. Frame construction with few supports should be used in preference to wall-bearing constructions. Partitions should be easily changed and constructed of materials with high salvage value.

Physical comfort: Proper ventilation is essential, especially in stores where food is sold. Odors should be removed rapidly. Complete air conditioning systems have been incorporated in recent store constructions. Care should be taken to keep out dust. Provisions for heating and cooling vary with climatic conditions and type of merchandise. Refrigeration units are included in food store equipment. Attention is called to the use of overhead *panel heating*. (See THE ARCHITECTURAL RECORD, November 1930.)

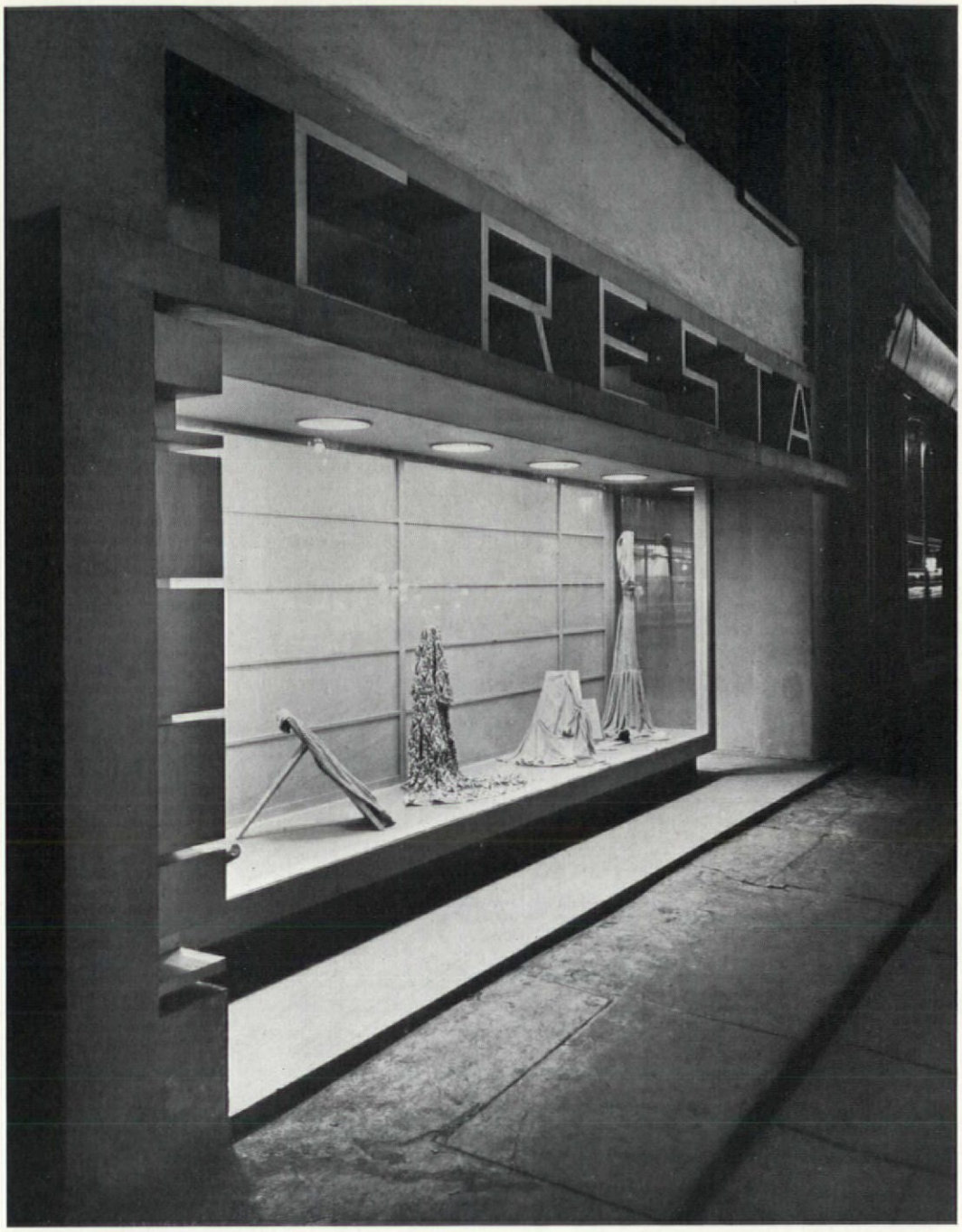
Walls and ceilings should have sound-absorbing surfaces on account of the large amount of glass used in most stores. Fans and mechanical equipment should be as noiseless as possible.

The store should look clean and be clean. Surfaces and corners should be easily cleaned. Colors should be light.

Cost: Large manufactured units, easily transported and erected, reduce erection time. All materials used should be resistant to fire and hard wear, non-absorbent, vermin-proof, easily replaced, repaired and removed.



HOUSING DEVELOPMENT WITH NEIGHBORHOOD STORES, ROTTERDAM, J. J. P. OUD, ARCHITECT



SHOP FOR CRESTA SILKS, LTD., LONDON, WELLS COATES, ARCHITECT

The shop was designed as a four-year exhibition stand. Total expenditure including demolition of former premises, electric heating and lighting installation, fixtures, furniture and carpets was limited to £1,000. The actual cost was £983. The shop was designed and completed in six weeks. The size of the display sign letters was determined by the desired main appeal from the entrance of a department store across the street, 90 feet away.

LIGHTING *

Surroundings, approach, signs: Parking space, ramps, and approaches to shopping centers should be clearly indicated and adequately lighted at night. Neon tube lighting can be used to direct the traffic. Glare should be avoided. Automatic time switches and photo-electric cell control will turn the light off at any desired hour. Attention is called to the use of floodlighting, colored light, and glass constructions with built-in lighting equipment for the buildings.

Window lighting: The distinction between show-window lighting and store lighting applies primarily to downtown retail stores where factors unrelated to the problems of retailing have hidden the store behind a display window case.

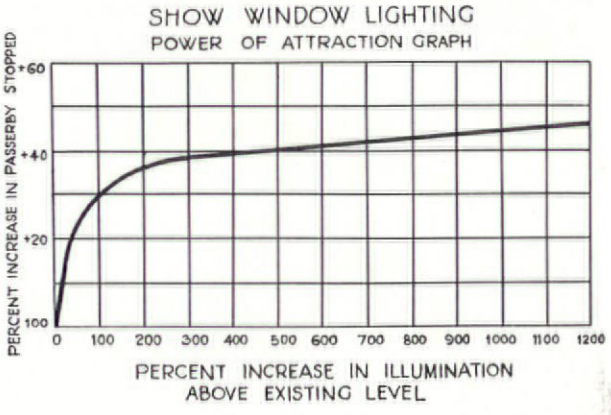
Good window lighting should:

1. Provide that level of intensity which experience and research have demonstrated will attract shoppers into the store.
2. Be unobtrusive in appearance.
3. Enhance the display.
4. Be flexible.
5. Be as economic as possible, bearing in mind the above three factors.

Daylight, especially bright sunshine, often produces reflections in polished plate glass fronts that detract from or obscure the merchandise on display. This is especially the case when the store interior or the background of the display window is dark. Therefore, it is not only necessary to make use of lighting equipment during the day to overcome these reflections, but in some cases to provide additional equipment of higher intensity. The reflectors are often installed on separate circuits so that higher intensities can be had during the daytime than at night, as in many instances superlighting of from 200 to 1,000 foot-candle intensity is employed to overcome daylight reflections.

How much light to use: The eye operates fairly efficiently at brightness levels about equal to indoor daylight (i.e., equivalent to from 20 to 100 foot-candles on a white surface). From the standpoint of effective vision only, illumination on light-colored displays should therefore be above 30 foot-candle, and on dark-colored displays above 100 foot-candles (allowing for absorption). However, competition by neighboring windows is usually the governing factor. If all windows in a given district were lighted to the same intensity the competition for customers would depend upon merchandising tactics alone. Eventually window lighting may be stabilized at some high level which will bring this condition about, but at the present time it is still possible to take advantage of the stimulating value of light. Illumination to attract the attention of motorists must be relatively much higher than that required to secure the attention of pedestrians, due to the shortness of the interval in which the display is visible.

The following graph compiled from test information now available shows the increase in percentage of passers-by stopped that may be expected for various increases in window-lighting intensities above the neighborhood level.



Inspection of this graph shows that when a merchant lights his windows 100 per cent better than those of his neighbors—in other words, when he doubles the neighborhood level—he can expect 30 per cent more passers-by to stop and look at his windows than was the case previously. If he triples the neighborhood level, he can expect about 36 per cent more passers-by to stop. For additional increases in illumination, additional passers-by will be stopped but not in interesting percentages.

In making the above graph, the neighborhood level was assumed to be 40 foot-candles which is a general figure taken from actual practice. Where the neighborhood level is actually much greater than 40 foot-candles, the above relationship may not hold strictly true. Many other factors could also affect the result, and too great reliance should not be placed upon studies of this nature, but sufficient information is available to demonstrate the sales value of better lighting. In designing the show-window illumination the usual procedure, therefore, is to determine the average intensity in the windows of nearby competitors and to lay out the job for twice this intensity.

* Valuable information on lighting was received from H. L. Logan, Holophane Company, Inc.

SHOP FOR CRESTA SILKS, LTD., LONDON, WELLS COATES, ARCHITECT

Letters in metal. Fascia and canopy supporting letters faced with galvanized steel plymax. Back screen steel frame glazed with ¼" Georgian wired rough-cast glass sandblasted one side. Soffit and sides of batten board. Base faced with ¼" copper plymax. Paving pink terrazzo. Front finished in two colors matte cellulose paint, slightly stippled surface, pale flesh and warm drab. Sandblasted glass, pale green. Concealed ligthing through 12 inch diameter circular openings. The returned end to the glass screen illuminated with one interior light projected on to a curved sheet of white painted plywood.

There will be cases where an examination of all the factors involved will lead to a choice of much higher levels of illumination. Tests show that although the number of passers-by stopped does not increase rapidly after the show window illumination has been raised to three times the level of the neighborhood, the increase in sales continues on beyond this point at a greater rate for higher intensities than does the increase of passers-by stopped. In other words, still higher intensities than two or three times the neighborhood level may result in bringing a larger percentage of the passers-by stopped into the store than occurs at the lower intensities and does, in certain cases, justify the use of such greatly raised levels.

Other tests have shown that color lighting was able to attract 40 per cent more persons than clear light for the same hourly current cost. However, color lighting if used continuously loses a large part of its attracting power after it ceases to be a novelty.

The cost of using show-window lighting twice as high as that of neighborhood level is not excessive and can be favorably compared with other expenses, as many analyses have established the fact that the show-window of the average retail store is directly responsible for one-third of the total sales.

SPACING OF REFLECTORS AND SIZE OF LAMPS FOR SHOW-WINDOW ILLUMINATION

Population of City or Town	Location of Store	Spacing of Reflectors (Inches)	Size of Mazda Lamps (Watts)
5,000 or less	Main Streets	15	150
	Side Streets	18	150
5,000 to 50,000	Main Streets	12	150—200
	Side Streets	15	150
Above 50,000	Super White Way	15	500
	Metro. Dist.	12	200
	Main Streets	12	150—200
	Side Streets	12	150

Westinghouse Lamp Company

Type of equipment selected will depend upon the dimensions of the window, the relation of its depth to its height, the character of the background (non-glossy to avoid reflections), the character of the average display, whether it is an island or standard window, the type of lighting distribution that will best suit the nature of business and the class of store.

Light sources should be concealed from the vision of the spectator. Bare lamps without reflectors cause unsightly shadows on the display and glare in the eyes of the passers-by.

Large windows will require proportionately larger equipment and heavier wattage lamps than smaller windows. Deep windows need the light thrown at higher angles to compensate for their greater depth. A dark background will require more light than a light background. A window trimmed close to the glass will require more light straight down than one trimmed further back. A window trimmed up to the top of the background will require more light in the upper part of the window than one customarily trimmed on the bottom.

Windows with closed backs usually require the background lighted from top to bottom. Windows with open backs require the light carefully controlled and kept relatively near to the front of the window to prevent glare to the people in the store. Island windows require a similar treatment because they can be observed from all sides and the light must be kept below angles at which it may enter the eyes of observers.

Drug stores require vertical illumination emphasized in their windows; furniture stores, horizontal. Stores that customarily centralize their display in the window can with advantage concentrate their light in similar fashion. Stores that customarily spread their display all over the window need uniform illumination.

Footlights are used to soften the shadows from overhead lighting, and spotlights and floodlights to light an important part of the exhibit. Color lighting effects are secured by auxiliary equipment more economically and with greater effectiveness than is possible through the use of screens on the main equipment.

Polished steel or mirrored glass reflectors and recessed flush-type reflectors with control lenses for vertical and horizontal beams specially designed for show-window service are on the market. Proper ventilation should be provided when exposed metal reflectors are used, in order to avoid steaming and frosting of the glass front and to prevent damage to certain types of merchandise like candy and wax. The equipment should be sufficiently flexible to serve variations in the display. Provisions should be made for possible increase of illumination.

Attention is called to the development of tube lighting and Claude Neon lighting for show windows, resulting in greater flexibility in illumination and less space requirements for the equipment. Photo-electric cell control can be used to turn display lighting on and off whenever a pedestrian or automobile passes.

When the type of equipment has been selected, provision should be made in the design of the window construction to properly accommodate it.

SHOP FOR CRESTA SILKS, LTD., LONDON, WELLS COATES, ARCHITECT

Front salon back of display window with entrance to fitting room. Counter with built-in cash register in pedestal. Built-in lighting panels. Materials: steel, plywood, batten board.

Store lighting: "The abrupt change in level of illumination between daylight outdoors and artificial light indoors is an important factor to be considered in the lighting of many interiors. When exposed to the high levels of daylight illumination the pupils of the eyes are contracted to their minimum size and require about 30 seconds to open to a point of equilibrium for the lower intensity of artificial illumination. . . . Thus, upon entering a store, for example, the pupils admit about one fourth as much light as they do some 30 seconds later. . . . If the level of general illumination is actually 20 foot-candles, upon entering, the effective illumination is initially equivalent to about 5 foot-candles. The effective illumination then increases from 5 foot-candles as the pupils open, but does not reach the maximum for some time owing to the lag of adaptation. The first impression of the interior may be quite unfavorable due to the apparent low level of illumination in contrast with that of daylight outdoors. . . .

"In addition to the 'loss' in foot-candles upon entering, the visual annoyance produced by the sudden plunge from daylight to artificial levels of illumination may be important in discounting the merit of an otherwise fine lighting installation. The undesirability of such a situation is further emphasized by the fact that many merchants consider the front part of their stores as the most valuable from the standpoint of creating sales.

"If a brightly-lighted interior is entered from a darker area . . . the effect of the sharp contrast in illumination is not of importance compared with the opposite condition. The pupils of the eye contract to compensate for the higher level of illumination in a very short time. Laboratory measurements on the opening and closing of the pupil indicate that the pupil takes about as many minutes to open as it does to close."*

The value of a more gradual change in level of illumination should be recognized. Full advantage should be taken of daylight openings to produce a gradient between the bright daylight and the darker store interior. When artificial lighting must be used, a level of illumination as high as 50 foot-candles is justified in the area near the entrance. This high intensity need not be carried out throughout the store.

The amount of light in the store depends directly upon the window lighting. If a proper balance is not arranged between these two, the best window lighting may fail its purpose. There are tests on record proving that when the window lighting has been raised to a level determined to stimulate passers-by to enter the store, the passers-by have failed to enter due to the dimness of the store interior. As a general rule the interior of the store should be lighted to not less than one-tenth of the illumination of the show window and when the illumination of the show window is less than 50 foot-candles the illumination of the inside of the store should not go lower than 5 foot-candles. In the business districts of most cities 10 to 15 foot-candles are invariably recommended today for store lighting. Many stores find 20 foot-candles desirable and do not consider this excessive in view of the increasing intensities of street lighting, sign lighting, and show-window lighting. It is well to provide an installation which is sufficiently flexible so that it will not become obsolete in a few years.

Distribution of light should insure illumination of all sections of the store where merchandise is displayed, inspected, and sold. Articles are best seen when presented normally to the direction of vision. Most stores therefore require illumination on vertical surfaces rather than horizontal. To assure good illumination on the vertical surfaces of the display, the lighting equipment should be arranged with direct reference to the lines of display on each side of the store and lines of display equipment down the center of the store. One line of lighting units is, therefore, seldom satisfactory. Usually, at least two rows are called for, parallel to the sides of the store and primarily illuminating the display fittings and their contents on their respective sides. Where central aisles occur, the lighting units can be arranged over the aisles to spread their light on the display fixtures and merchandise on each side. To assist in focusing attention on the merchandise, the average retail store using three rows of ceiling fixtures would be better off with the omission of the central row. In that way the brightness of the center of the store devoted to traffic can be reduced, and the contrast between it and the bright merchandise will enhance the value of the lighting on the merchandise.

Showcase lighting requires approximately four times the intensity of the general store illumination. The lighting equipment is installed along the front upper edge of the case with showcase reflectors or trough reflectors. Merchandise affected by heat should be lighted from outside. Underfloor duct system should be specified.

Wallcase lighting requires approximately two or three times the intensity of the general store illumination. Individual reflectors, trough reflectors or lighting equipment over diffusing glass panels.

Color matching and accurate identification of color is often necessary. Clothing stores, dry goods stores, haberdasheries, and paint stores especially, should be provided with daylighting equipment as a means of approximating daylight.

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*LIGHTING PLUS VISION EQUALS SEEING. By M. Luckiesh and F. K. Moss. Paper presented before the Twenty-fourth Annual Convention of the Illuminating Engineering Society, Richmond, Va., 1930.

CHECKING LIST

Location: Survey of trade area, increase in population, types of industries, existing retail outlets, density and nature of traffic, shifting of retail trade area, relation of rent to estimated sales, accessibility, parking facilities, filling stations, conveniences.

Signs: Legibility area, lines of vision for pedestrians and motorists, legibility.

Open display: Maximum display space and sensory contact between shopper and merchandise.

Visibility: View of store interior from street. Maximum extension of store parallel to lines of street traffic. No structural obstructions in plate glass fronts. Selling space open to view. Adequate lighting especially in back of store. Utilization of daylight. Light-reflecting surfaces. Reflections in plate glass. Prevention of steaming and frosting.

Display facilities: Subordinate to merchandise. Display levels determined by lines of vision, nature of merchandise and ease of handling. Equipment easily moved, not obstructive to view of store; locate to guide the shopper into the store and to control circulation in selling space. Colors to focus attention on merchandise. Neon signs. Protection of merchandise from sunlight and heat.

Access and store circulation: Store on street level. Remove access from lines of dense traffic. No cross traffic. Ample aisles.

Self service: Location of wrapping and counting counters. Table space for shoppers.

Departmentizing: Location of demand and impulse goods to control circulation. The shopper should traverse each aisle.

Size and shape of selling space: Compactness; not too deep.

Conveniences: Toilets, lavatories, rest rooms, drinking fountains, telephone service, lockers.

Construction: Few supports, ease of change, salvage value. Materials fire-resistant, wear-resistant, non-absorbent, verminproof, easily replaced and repaired.

Mechanical equipment: Ventilation, heating, air conditioning, cooling, dust prevention, burglar alarm and protection at night. Fire alarm and sprinklers. Dumbwaiters. Garage equipment.

Lighting of surroundings and signs: Indication of approach and store. Lighting of parking space. Automatic time switches and control.

Window lighting: Equipment to overcome reflections in plate glass. Neighborhood lighting level. Colored light. Automatic control. Light sources concealed. Equipment determined by dimensions of window and nature of merchandise. Flexibility and provision for increase in intensity. Ventilation. Footlights and spotlights. Provision for built-in equipment.

Store lighting: Gradient between bright daylight and store interior. Relation to window lighting. Recommended minimum 10 to 15 foot-candle. Illumination of sections of selling space where merchandise is displayed and sold. Showcase and wall case lighting. Protection of merchandise from heat. Daylighting equipment for color matching and identification.

REFERENCES

Small Store Arrangement, published by Domestic Distribution Department, Chamber of Commerce of the United States.

Domestic Commerce, issued by the Bureau of Foreign and Domestic Commerce, United States Department of Commerce.

Distribution Cost Studies, issued by Bureau of Foreign and Domestic Commerce, United States Department of Commerce.

Contemporary Art Applied to the Store and Its Display, by Frederick Kiesler, Brentano, New York.

Better Grocery Stores, published by The Progressive Grocer, New York.

National Grocers Bulletin, published by National Association of Retail Grocers, St. Paul, Minn.

System, published by McGraw-Hill, New York.

Plans for model stores have been prepared by the following associations and wholesalers:

National Retail Hardware Ass'n, Indianapolis, Ind.

Southern California Retail Grocers Ass'n, Los Angeles, Calif.

Wholesale Dry Goods Institute, New York.

National Association of Retail Grocers, St. Paul, Minn.

The Merchandising Research Division of the Bureau of Foreign and Domestic Commerce, United States Department of Commerce.

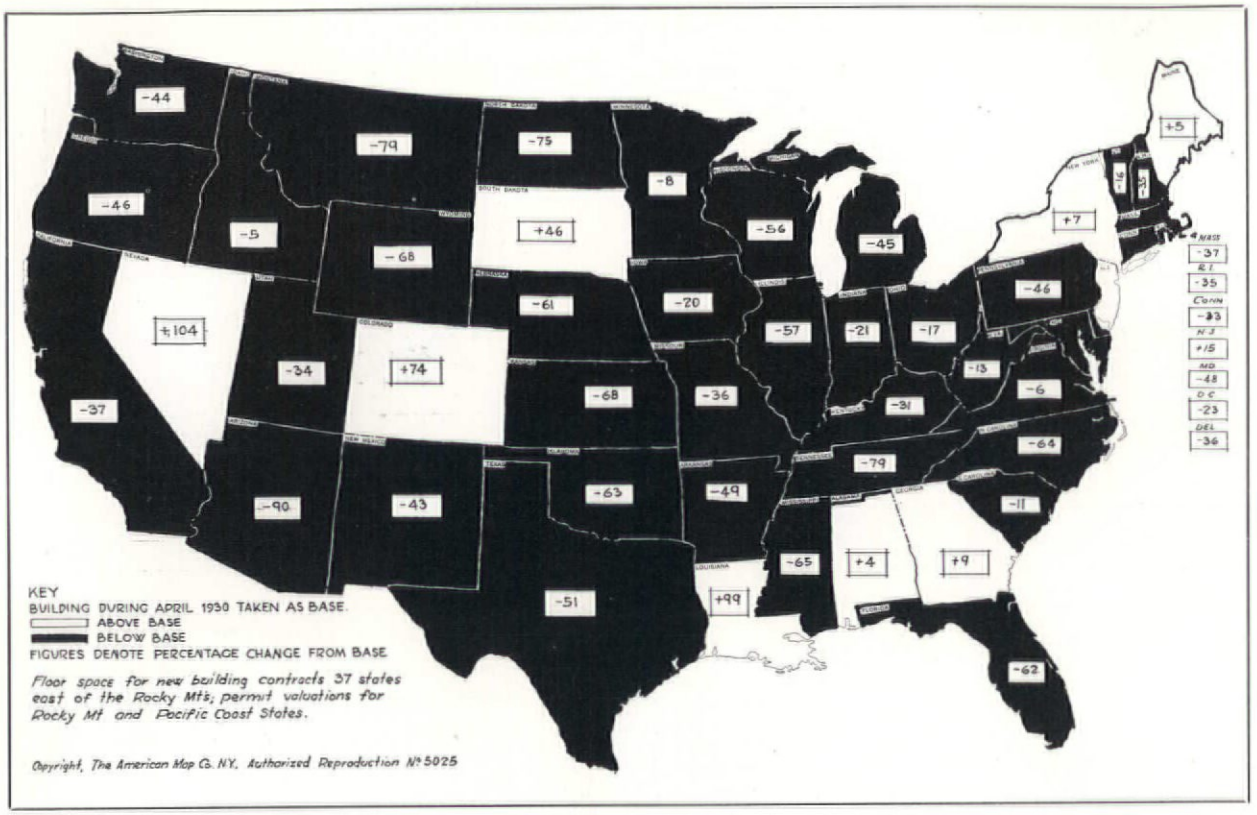
Sprague, Warner & Company, Chicago, Ill.

Francis H. Leggett & Co., New York.

The Westinghouse Lamp Company, Bloomfield, N. J.

Independent Grocers' Alliance, Chicago, Ill.

Literature on store arrangement, based on research, is available from manufacturers of store equipment.



The April building map showed seven states east of the Rocky Mountains where contracts on a floor space basis were larger than in April, 1930: Maine, New York, New Jersey, Georgia, Alabama, Louisiana, and South Dakota. In addition two states in the Rocky Mountain District, based upon partial data, showed April permit valuations above April of last year. From the standpoint of number of states to show improvement in contracts the April map was more favorable than the March map which showed only three states east of the Rockies with floor space totals higher than in March, 1930.

BUILDING TRENDS AND OUTLOOK

ECONOMICS OF SMALL STORE CONSTRUCTION

By L. Seth Schnitman

Although the construction of stores, both single and multi-storied, reached greatest expansion in the spring of 1929, the year 1928 showed a larger annual total than any other year on record. On the basis of contract valuation 1928 showed a construction volume almost twice as large as that reported during 1930; while on a floor space basis new store construction undertaken in 1928 was considerably in excess of twice the floor space volume shown for1930. In either instance, however, 1930 was lower than any other year since at least 1925, when comparable records first became available.

During 1928 department store undertakings bulked large in the year's total for new store construction. Deducting the effect of this factor 1929 will doubtless stand as the year of greatest importance in the construction of single-story or "taxpayer" stores.

Store construction usually reaches its peak at or about the peak of commercial activity. The cycle of store construction, which started its downward phase when the business decline set in during 1929, was no exception to this rule.

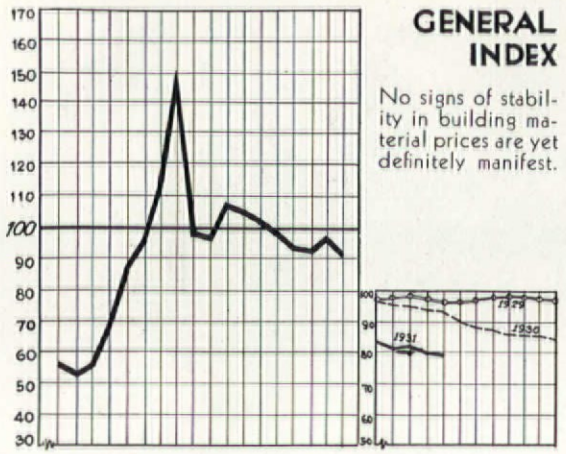
At this time when vacancies in "taxpayer" types are particularly pronounced the burden of taxation, difficult enough in times of normal commercial activity, is indeed an additional hardship to the landlord when the only fixed improvements upon the land are not bearing revenue.

Obviously, among the motives behind store construction, profit is foremost—profit on land, on improvements, on total investment. To provide means for earning carrying charges many have regarded the "taxpayer" as an effective tool. It has, in fact, af-

(Continued on page 84 advertising section)

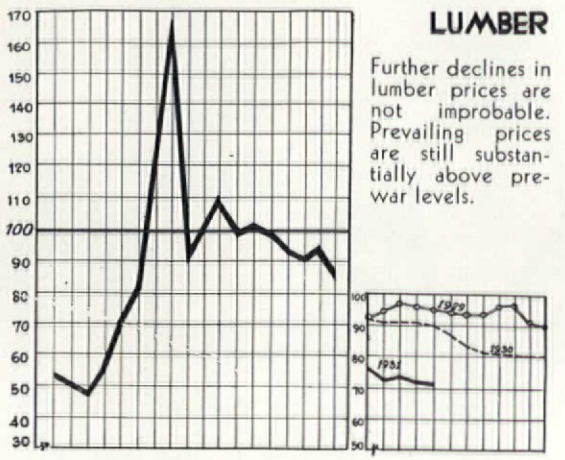
WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average = 100



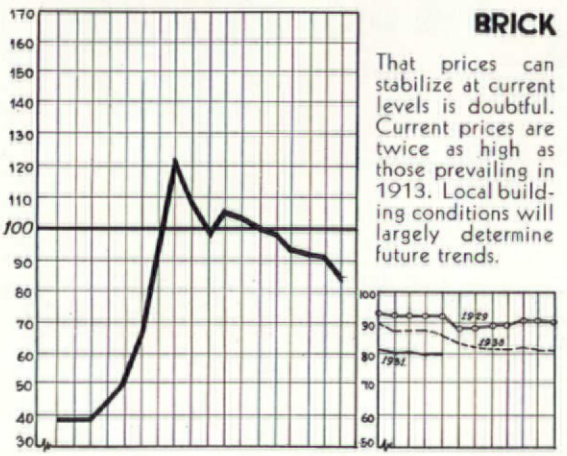
GENERAL INDEX

No signs of stability in building material prices are yet definitely manifest.



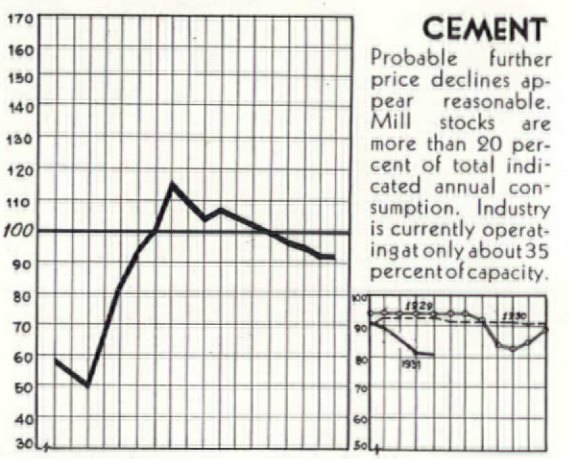
LUMBER

Further declines in lumber prices are not improbable. Prevailing prices are still substantially above pre-war levels.



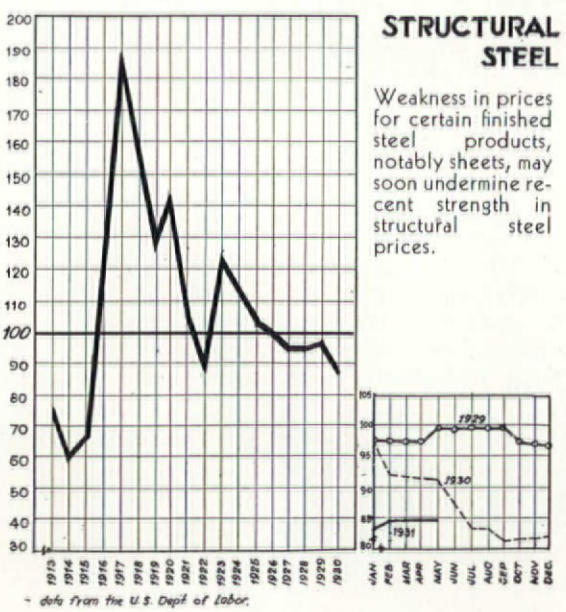
BRICK

That prices can stabilize at current levels is doubtful. Current prices are twice as high as those prevailing in 1913. Local building conditions will largely determine future trends.



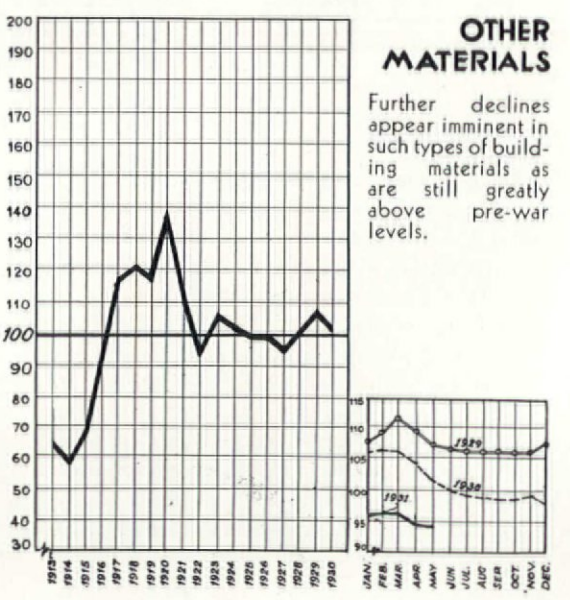
CEMENT

Probable further price declines appear reasonable. Mill stocks are more than 20 percent of total indicated annual consumption. Industry is currently operating at only about 35 percent of capacity.



STRUCTURAL STEEL

Weakness in prices for certain finished steel products, notably sheets, may soon undermine recent strength in structural steel prices.



OTHER MATERIALS

Further declines appear imminent in such types of building materials as are still greatly above pre-war levels.

- data from the U.S. Dept of Labor.

Natacha Carlu, mural painter, is the wife of Professor Jacques Carlu. They are shown here with cartoons of the murals designed for the T. Eaton & Co. store in Montreal, featured in this issue. The cartoons were recently exhibited at the New York Architectural League show.

In addition to teaching architectural design at Massachusetts Institute of Design and directing the summer school at Fontainbleau, France, Professor Carlu is practising architecture in New York.

ARCHITECTS' ANNOUNCEMENTS AND CALENDAR

H. I. Oser and J. Lewis, architects and engineers, have moved their offices from 1440 Broadway to 110 West 40th Street, New York City.

John P. Parrish, formerly of Indianapolis, has been appointed architect for the Wrought Iron Range Company of St. Louis and also Culver Military Academy, Culver, Indiana. Offices are at 5661 Natural Bridge Avenue, St. Louis, Missouri.

Yasuo Matsui, architect, and F. H. Dewey and Company, architects and engineers, have moved from 101 Park Avenue to the Empire State Building, Fifth Avenue and Thirty-fourth Street, New York.

Joseph W. McCarthy announces that his architectural office is now located at 221 North La Salle Street, Chicago.

John N. Bullen, architect, announces the removal of his offices from 607 Exchange Building, Miami, to 8 Bastian Building, Miami Beach, Fla.

Theodore R. Jacobs, architect, has moved his offices to the Central Building, 108 West Sixth Street, Los Angeles.

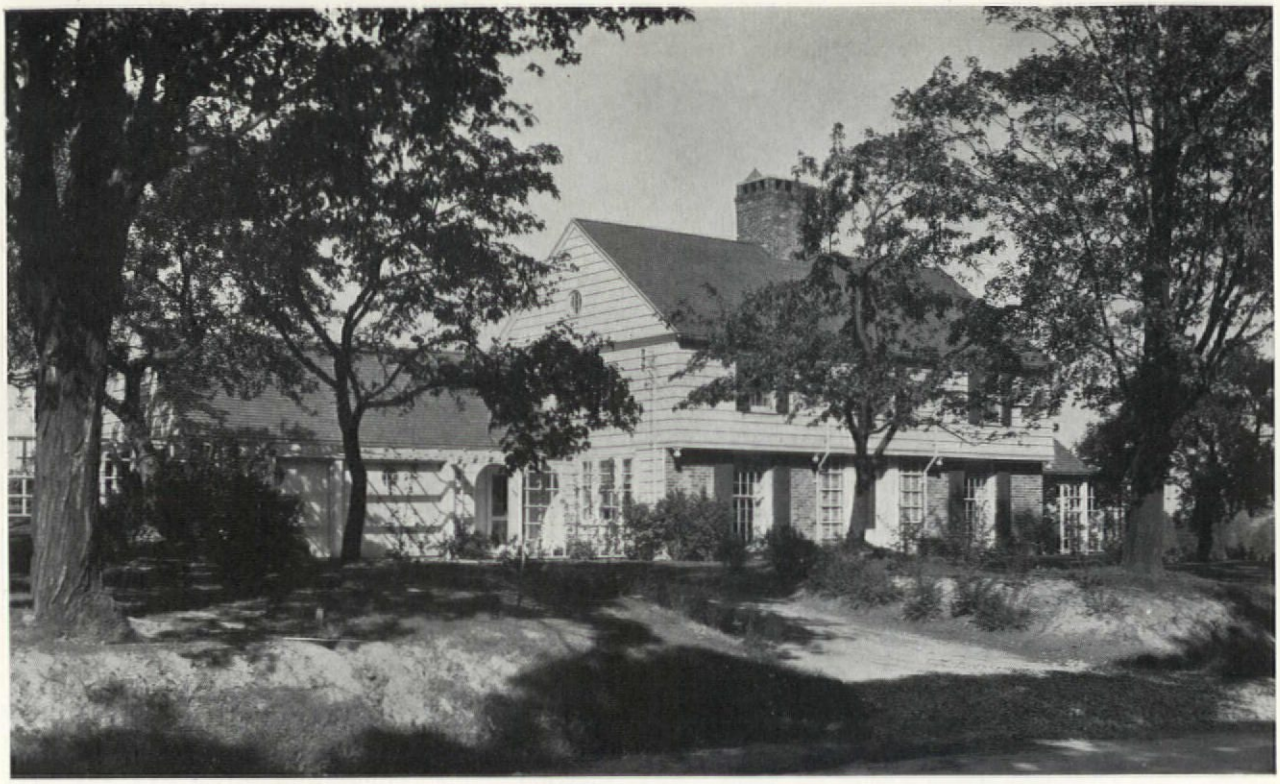
O'Meara and Hills, architects, announce new offices at 5709 Waterman Boulevard, St. Louis, Mo.

Raymond M. Hood, Frederick A. Godley and J. Andre Fouilhoux, announce the dissolution by mutual consent of the firm of Raymond Hood, Godley & Fouilhoux, as of March 31, 1931. Raymond M. Hood and J. Andre Fouilhoux will continue the practice of architecture under the firm name of Hood & Fouilhoux, 40 West 40th Street, New York.

Valuable information for the planning and construction of fraternity houses is contained in the Report of the Committee on Chapter House Architecture of the Interfraternity Conference. Copies may be obtained from Wilbur M. Walden, chairman of the committee, 15 East 26th Street, New York City.

CALENDAR OF EVENTS AND COMPETITIONS

June 1-5	International Town Planning and Housing Federation Congress, Berlin.
Until June 6	Annual exhibition of the Chicago Architectural Exhibition League with the cooperation of the Arts Club of Chicago, Wrigley Building, Chicago.
June 10	Judgment of entries for Steel Bridge Competition. Address American Institute of Steel Construction, 200 Madison Ave., New York City.
July 5-Sept. 5	Summer course in Italian Architecture, Rome, Italy. Apply to Italian Tourist Information Office, 745 Fifth Avenue, New York City.
July 10-Aug. 30	Vacation-study tour of housing, arranged and directed by The Garden Cities and Town Planning Association, London, in cooperation with the City affairs Committee, 112 East 19th Street, New York City. For information, address Helen Alfred, Housing Chairman.
July 16-Aug. 26	Second Annual American Fair, Atlantic City Auditorium.
Until August	Art Exhibition, Royal Scottish Academy, Edinburgh.
Until Aug. 2	German Building Exhibition, in connection with International Town Planning and Housing Exhibition, Berlin.
May 4-Aug. 8	Art Exhibition, Royal Academy, London (Burlington House).
October 1	Closing date for entries for Lincoln Arc Welding Prize competition. Address inquiries to the Lincoln Electric Company Cleveland, Ohio.
October 15	Closing date for entries to 5th Annual Small House Competition. Address the House Beautiful, 8 Arlington Street, Boston.
November	Exposition of Indian Tribal Arts, Grand Central Art Galleries.
October-December	Art Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).
December 1	Closing date for entries in 1931 Better Homes in America Competition. Address c–o American Institute of Architects, 1741 New York Ave., Washington, D. C.



Inskip

HOUSE OF JOHN J. HERMAN, ORCHARD PARK, N. Y.
HUDSON AND HUDSON, ARCHITECTS

IN THE JULY ISSUE

Among the features for this month will be an unusually good Portfolio of Current Architecture. Two illustrations are shown on this page. Besides these, the Portfolio will include a ranch house in Wyoming, a week-end house in Indiana, a dog and cat hospital in California, and recent additions to the Bullock's Wilshire store in Los Angeles.

Carroll E. Welch, architect, is the author of an article dealing with planning requirements of Masonic Building Design.

Estimating Costs of Small Houses, by Arthur Brace, sets up ratios for basic materials so that expenditures may be kept in line with the client's pocketbook.

Stair Design—types, materials and new developments —is the subject of Notes on Drafting and Design.

The Technical News and Research article will feature Illumination.

Danielson

SOMMERS SHOE SHOP, NEW YORK
PERCIVAL GOODMAN, INC., ARCHITECTS

WITH A BRIGHT AIRPLANE BEACON *atop it, the Ritz-Carlton is an Atlantic City landmark. This fine hotel, like so many modern hostelries, paints with Barreled Sunlight for lasting beauty.*

Another famous Hotel . . .

The RITZ-CARLTON *of Atlantic City*

uses it for interiors of lasting beauty

AS one would naturally conclude from the distinguished character of the Ritz-Carlton's architectural design, its interiors are thoroughly charming. Appointments are modern, furnishings luxurious, decorations handsome.

In the Ritz-Carlton—as in hundreds of other fine buildings—interiors of lasting beauty and cleanliness are achieved by painting with Barreled Sunlight—in lustrous white and pleasing tints. Satin-smooth, with a soft lustre, a rich depth, Barreled Sunlight is a handsome finish. Stubbornly dirt resistant, washable as tile, it is decidedly practical; contributing immeasurably to the immaculate cleanliness, the long lasting beauty of painted surfaces.

See our catalogue in Sweet's, and for your own files let us send you our booklet, "For Interiors of Lasting Beauty and Cleanliness," which describes in greater detail the characteristics of Barreled Sunlight.

U. S. Gutta Percha Paint Co., 22F Dudley Street, Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

Full Gloss, Semi-Gloss and Flat. Drums and cans. Easy to tint with colors in oil.

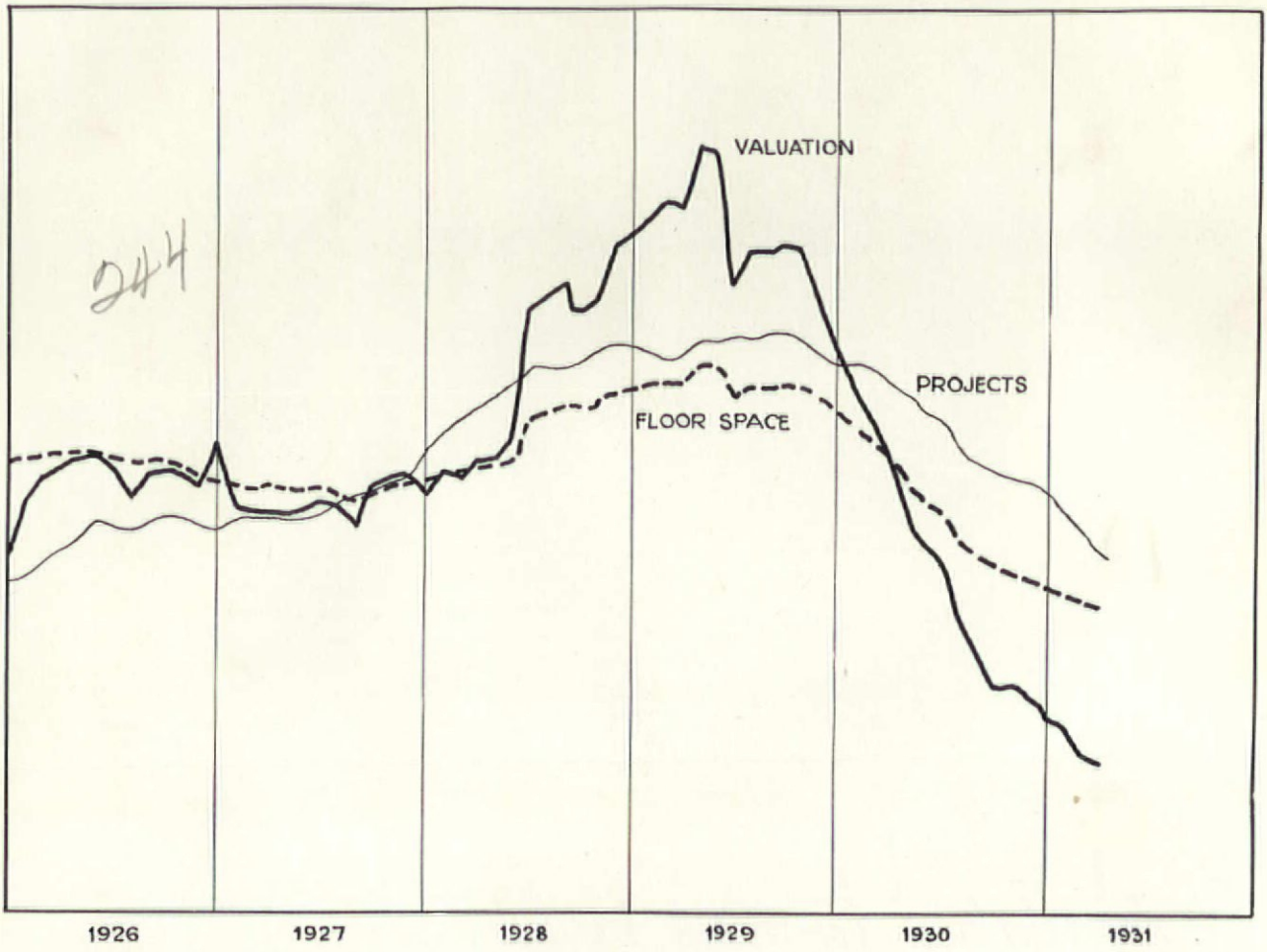
SEE OUR CATALOGUE IN SWEETS

Barreled Sunlight

Reg. U. S. Pat. Off.

TREND OF STORE CONSTRUCTION: 37 EASTERN STATES

(Based on contract award data of F. W. Dodge Corporation)



Although the Spring of 1929 marked the peak of store construction, the year 1928 showed the largest annual total on record. Since 1929 the trend of store construction has been downward. No present signs of a turn for the better are apparent, although the rate of decline seems to be somewhat arrested.

(Continued from page 515 editorial section)

forded speculative profits and good investment returns, but at what price! In the process it has entailed increased assessments, higher taxes, larger fixed or carrying charges, such as interest, depreciation, insurance, repairs, obsolescence. Economic conditions have forced vacancies so that now carrying charges on these properties are more burdensome than those previously obtaining with respect to the land in its native state.

For the most part "taxpayers" have been of the marginal type—*marginal* in the sense that they provided store space to fill a seeming demand. Erected on the outer fringes of business districts, when general business was good and becoming better, these stores were largely occupied by marginal merchants. The story of business mortality revealed in the latest figures on commercial failures bears mute evidence to the terrific toll which business incompetence has exacted among these merchants. Erstwhile profit-margins have turned to deficits and the "taxpayers" have become depopulated.

There can now be little question that the year 1931 will show further large retrenchment in new store construction. The indicated decline from 1930 in contract values will likely approximate 50 per cent. Such is the aftermath of building excesses.

In the past small store construction has been planned largely by the carpenter or mason builder without proper architectural direction and guidance, without proper regard for the economics of construction or general business and too often with only little respect for other considerations except the temporary satisfaction of a craving for speculative profit.

If the present business depression has shown the futility of the nominal escape from taxation afforded by the so-called "taxpayer" then the next wave of commercial activity should produce a nearer approach to fundamentals so far as store construction goes than has hitherto been attained. In this approach the architect may be expected to play an increasingly important part.